AUGUST 1958

# The Controller

UNIVERSITY OF MICHIGAN
AUG 11 1958
BUSINESS ADMINISTRATION LIBRARY

## CAPITAL EXPENDITURE EVALUATION

Frank Schwab, Jr.

## THE ADVERTISING BUDGET

Frank D. Robinson

## A THEORY OF DEPRECIATION CONSISTENT WITH DECISION-MAKING

Harold Bierman, Jr.

**Controllers Annual National Conference**

**ATLANTIC CITY**
**October 19-22**

AUDITED PAID CIRCULATION ABC

65c | $6.50 A Year

OPEN FOR PUBLIC...
University of Michigan
Gen'l. Library
Ann Arbor, Mich.
12/58
CAL

# WHAT!...

## let a salesman write his own expense checks?

Of course! Many companies have been doing it for years, using The *Traveletter*® System. Shocking, isn't it? Crazy idea! Maybe, so — to old-fashioned management — but modern management has found out differently.

The *Traveletter* System is an established system that has provided sound control of travel expenses for 62 years for many of America's largest companies . . . who recognize the advantages of The *Traveletter* System over ordinary home office methods of handling travel expenses.

Besides controlling expenses here's what The *Traveletter* System does:

1. Materially reduces the cost of reimbursement procedure.
2. Eliminates cash advances.
3. Simplifies banking procedures.
4. Aids Sales Department in processing expense reports.
5. Assists traveler in authenticating expenses as required by the I.R.S. tax ruling.

*"Traveletter" Reg. U.S. Pat. Off.*

*Traveletter*®

***The Modern System for handling Sales Expenses . . . Since 1894***

Descriptive brochure on request

TRAVELETTER CORPORATION ○ GREENWICH 2, CONNECTICUT

IAS

OVER 50 YEARS OF PROGRESS IN ACCOUNTING TRAINING

# HOW IAS TRAINING MEETS INDIVIDUAL NEEDS

**Each IAS training program is "tailored to fit" the needs of the individual. This is accomplished through the IAS elective plan embracing 240 comprehensive study assignments, covering a wide range of accounting and management subjects.**

The IAS electives currently available (with the number of comprehensive study assignments indicated) are:

Basic Auditing (10)
Public Auditing (20)
Internal Auditing (20)
Basic Cost Accounting (10)
Advanced Cost Accounting (20)
Corporation Accounting (10)
Corporation Finance (10)
Business Statistics (10)
Management Control (20)
Economics (10)
Office Management (20)
Accounting Law (10)
Federal Income Tax (10)
CPA Coaching (20)

• After general accounting principles have been mastered, each IAS Diploma Course student selects from 14 electives those leading to his specific training objective.

• With this broad curriculum at his command, each IAS student can study first those subjects needed immediately and can then broaden his knowledge of accounting and management through study of additional electives.

The school's 24-page Catalogue A is available free upon request. Address your card or letter to the Secretary, IAS . . .

**INTERNATIONAL ACCOUNTANTS SOCIETY, INCORPORATED**
*A Correspondence School Since 1903*
**209 WEST JACKSON BOULEVARD • CHICAGO 6, ILLINOIS**

IAS IS AN ACCREDITED SCHOOL, ACCREDITED BY THE ACCREDITING COMMISSION OF THE NATIONAL HOME STUDY COUNCIL

PAUL HAASE, Editor

BENJAMIN R. MAKELA
Publication Manager

CEIL SMITH THAYER
Assistant Editor

JOHN A. MURPHY
Advertising Manager

ARTHUR J. GRIFFIN
Circulation Manager

Editorial material in THE CONTROLLER is selected in accordance with the following:

**CONCEPT OF MODERN CONTROLLERSHIP**
**of Controllers Institute of America**

*1. To establish, coordinate and maintain through authorized management, an integrated plan for the control of operations. Such a plan would provide, to the extent required in the business, cost standards, expense budgets, sales forecasts, profit planning, and programs for capital investment and financing, together with the necessary procedures to effectuate the plan.*

*2. To measure performance against approved operating plans and standards, and to report and interpret the results of operations to all levels of management. This function includes the design, installation and maintenance of accounting and cost systems and records, the determination of accounting policy and the compilation of statistical records as required.*

*3. To measure and report on the validity of the objectives of the business and on the effectiveness of its policies, organization structure and procedures in attaining those objectives. This includes consulting with all segments of management responsible for policy or action concerning any phase of the operation of the business as it relates to the performance of this function.*

*4. To report to government agencies, as required, and to supervise all matters relating to taxes.*

*5. To interpret and report on the effect of external influences on the attainment of the objectives of the business. This function includes the continuous appraisal of economic and social forces and of governmental influences as they affect the operations of the business.*

*6. To provide protection for the assets of the business. This function includes establishing and maintaining adequate internal control and auditing, and assuring proper insurance coverage.*

ABC
Member
Audit Bureau
of Circulations

MPA
Member
Magazine Publishers
Association, Inc.

# The Controller

## Contents for August 1958

**FEATURES** Page

CAPITAL EXPENDITURE EVALUATION—An analysis of pros and cons of various methods for making capital expenditure decisions—Frank Schwab, Jr. . . . . 359

THE ADVERTISING BUDGET—Using the game theory to determine how much to spend for advertising—Frank D. Robinson . . . . . 368

A THEORY OF DEPRECIATION CONSISTENT WITH DECISION-MAKING—Describes a means of allocating the depreciation charge so that the return on investment is undistorted—Harold Bierman, Jr. 370

EFFECTIVE BUSINESS BUDGETING . . . . . 372

**SPECIAL FEATURE**

PRESIDENTS OF LOCAL CONTROLS OF CONTROLLERS INSTITUTE—SECTION II—1958-1959 . . . . . 382

**DEPARTMENTS**

CORRESPONDENCE . . . . . 352

SCANNING THE SCENE . . . . . 357

DATES AHEAD . . . . . 373

PAGING THE NEW BOOKS . . . . . 380

BIG BUSINESS AND HUMAN VALUES
Reviewed by John Adams

RESEARCH NOTES . . . . . 394

PERSONAL NOTES . . . . . 396

OPPORTUNITIES . . . . . 400

THE CONTROLLER. Published monthly by Controllers Institute of America, Inc. Two Park Avenue, New York 16, N. Y. Publication office, 73 Main Street, Brattleboro, Vermont.

Second class mail privileges authorized at Brattleboro, Vt., September 1, 1937, under the act of March 3, 1879. Subscription $6.50 a year. 2 years $11.00. Single copy 65c. Orders from nonmembers of CIA outside Continental U. S. and Canada must be accompanied by remittance. Address subscriptions (and notices of change in mailing address) to the Circulation Manager care of the New York office. Advertising rate card available upon request to the Advertising Manager.

Change of address should be sent before the first of month preceding the issue to be changed.

The editor will be pleased to review manuscripts submitted for publication, but will not be responsible for loss in transit or otherwise. The views expressed in the various articles are those of the authors and not necessarily those of Controllers Institute of America. Printed in U. S. A.

**POSTMASTER: Send Form 3579 to The Controller, 2 Park Ave., New York 16, New York.**

VOLUME XXVI, No. 8 Copyright 1958 Controllers Institute of America, Inc. AUGUST 1958



X.UM

# cut freight payment costs . . . in the New York area

## *talk to the people at Chase Manhattan*

Chase Manhattan's Freight Payment Plan operates on a clearing house principle . . . settles the payment of freight bills between shippers, receivers and carriers.

Chase Manhattan's Freight Payment Plan Pays Off Three Ways!

- *Simplifies record keeping*
- *Assures payment of freight bills within prescribed time.*
- *Eliminates check writing and signing*

Find out how Chase Manhattan's Freight Payment Plan can benefit *you.* Just mail the coupon.

THE
CHASE
MANHATTAN
BANK

Chartered 1799
NEW YORK, N. Y.

*Member Federal Deposit Insurance Corporation*

The Chase Manhattan Bank
Freight Payment Division, Dept. MM
18 Pine Street, New York 15, New York

☐ Please mail me further information about Chase Manhattan's Freight Payment Plan.

☐ Please call me to arrange an appointment to discuss the plan.

(Check One)

*Company* ..... *Phone* .....

*Name* .....

*Street* .....

*City* ..... *State* .....

# Correspondence

## CAPITAL INVESTED IN FIXED ASSETS

*Editors,* THE CONTROLLER:

Enclosed please receive a paper on Capital Invested in Fixed Assets for your consideration. It is a new approach to an old problem and I think it should be brought to the attention of the readers of your periodical. In case you have to suggest some improvements of the text, please let me know.*

DR. GUENTER ZIMMERMANN
Frankfurt/Main
Max Regerstr. 3
Germany

** We will publish any comments from readers on this page—The Editors.*

For the computation of return on investment, three different basic values are suggested as capital invested in fixed assets: Cost, Replacement Value, and Net Value (cost less provision for depreciation).

Cost cannot be an appropriate basis. Only at the beginning of the useful life of an asset item does cost equal the capital invested. Every month and every year, the invested capital is decreasing according to depreciation. The purpose of depreciation is to accumulate funds until the amount originally spent is reached. At the end of the useful life of the item, the invested capital equals the amount of the scrap value.

**TABLE I**

| *Year* | *Net Values* | | |
|---|---|---|---|
| | *At Beginning of the Year* | *In the Middle of the Year* | *At the End of the Year* |
| 0 | — | — | 1,000.00 |
| 1 | 1,000.00 | 900.00 | 800.00 |
| 2 | 800.00 | 700.00 | 600.00 |
| 3 | 600.00 | 500.00 | 400.00 |
| 4 | 400.00 | 300.00 | 200.00 |
| 5 | 200.00 | 100.00 | — |

In the opinion of the author, the replacement value should not be used, since the capital invested is an historical figure which has nothing to do with the present or future price of the same or a similar asset item. Furthermore, replacement values change very often and for that reason are not an appropriate basis.

In the case of straight-line depreciation, the net values represent the invested capital. However, the net values are decreasing permanently. That would mean a higher return on investment each year and each month, provided that all other factors remain unchanged. This would be an unsatisfactory result on which decisions by management cannot be based.

The problem is to find a net value which will remain the same during the entire useful life of the item. How this can be done will be described hereafter.

The net values of a machine with a useful life of five years and $1,000.00 cost are shown in *Table I.* The net values computed for the middle of the year represent the capital invested in the average of the year. These average net values are discounted to the beginning of the period of useful life and added to one sum. This sum is the present value of all yearly average net values during the entire useful life of the asset item. The present value is then entirely transformed into an annuity that becomes due in the middle

*(Continued on page 354)*

F B&D

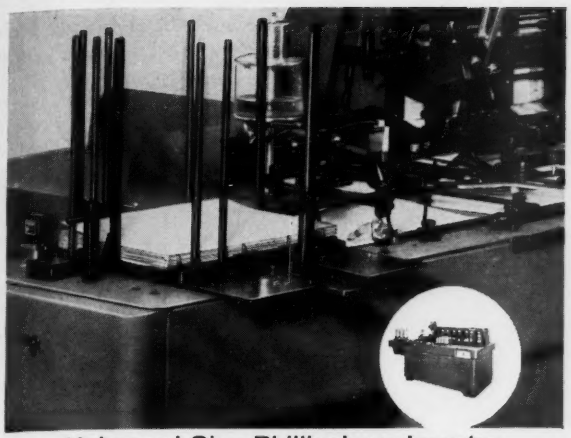
**Depreciation and Depletion Studies**
**Valuations and Appraisals**
**Organization and Business Reports**
**Securities Registration Investigations**
**Design and Construction**
**Industrial Engineering**

**Ford, Bacon & Davis**
**Engineers**

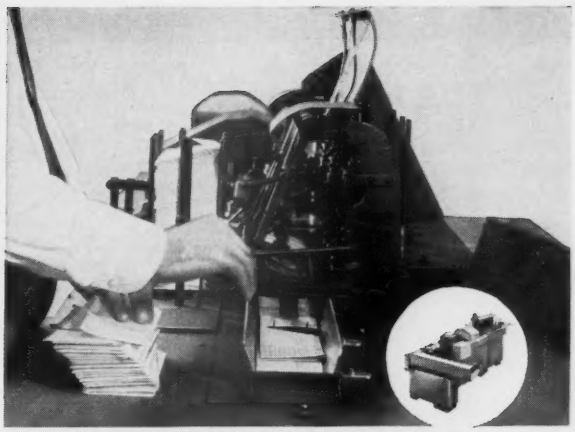
**39 BROADWAY, NEW YORK 6, N. Y.**
**CHICAGO · LOS ANGELES**



X-UM

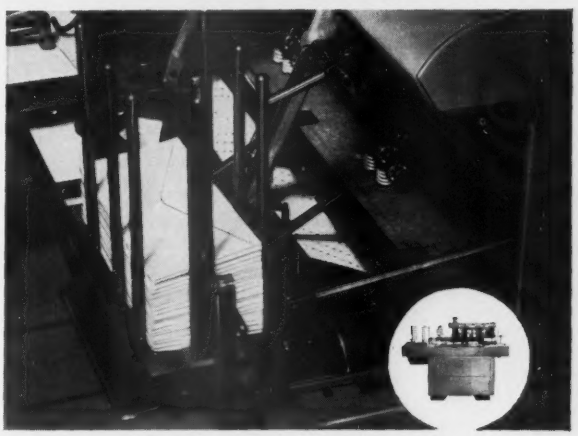


Universal Size Phillipsburg Inserter



Open-Feed Station Attachment

# What's new in mechanized mail inserting?



Punch-Card Attachment

## 3 new developments in Phillipsburg Inserters!

Bell & Howell Phillipsburg Company, pioneer and world-leader in mechanized mail processing equipment, is busy designing and engineering new machines for every mailer, large and small. Here are only three exciting new developments in Phillipsburg Inserters—more are on the way!

1. ***NEW Universal Size Phillipsburg*** —Now, *one* machine can handle *all* insert sizes from 5⅛" x 3¼" up to 11⅛" x 8¼"! Provides accurate, fast vacuum feed, adjustable speed motors, full double-insert detection at every station. Ideal for publishers, department stores, brokerage firms, other mailers!

2. ***NEW Open-Feed Station Attachment*** —Allows fast hand feeding of loose inserts or bulky enclosures, such as punch cards, sales slips, capsules, celluloid credit cards, many types of samples... with all other advantages of a stuffing machine!

3. ***NEW Punch-Card Attachment*** —Now, punch cards are stuffed by the *Knife Edge* principle, the system used on all punch-card machines for accuracy, regardless of hole positions in card!

*Do you have an inserting problem?*
*Ask us to help you solve it.* **Send Coupon...**

FINER PRODUCTS THROUGH **IMAGINATION**

**Bell & Howell**
**Phillipsburg**
PHILLIPSBURG, NEW JERSEY
*Successor to Inserting and Mailing Machine Company*

**Bell & Howell Phillipsburg Co., Phillipsburg, N. J.**

Send more information on_____
*(mailing problem)*

__Universal Size Phillipsburg __Open-Feed Attachment __Punch-Card Attachment

*Name*_____

*Firm*_____

*Street*_____

*City*_____ *Zone*_____ *State*_____

C-8-8

**TABLE II**

| *Useful Life Years* | *Present Value of the Total of Yearly Average Net Values* | *Annuity = Invested Capital* |
|---|---|---|
| 2 | 95.76 | 50.73 |
| 3 | 141.17 | 51.29 |
| 5 | 226.94 | 52.33 |
| 10 | 415.13 | 54.78 |
| 20 | 702.33 | 59.47 |
| 30 | 905.04 | 63.86 |

**TABLE III**

**COMPUTATION OF INVESTED CAPITAL (underlined figures) at an interest rate of 6%**

| *Years* | *$100.00 Discounted* | *Average Net Values in the Middle of the Year* — *Years of Useful Life* | | | | | *Average Net Values in the Middle of the Year Discounted* — *Years of Useful Life* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 | 3 | 5 | 10 | 20 | 2 | 3 | 5 | 10 | 20 |
| ½ | 97.133 | 75 | 83.33 | 90 | 95 | 97.5 | 72.85 | 80.94 | 87.42 | 92.28 | 94.70 |
| 1½ | 91.635 | 25 | 50.00 | 70 | 85 | 92.5 | 22.91 | 45.82 | 64.14 | 77.89 | 84.76 |
| 2½ | 86.448 | | 16.67 | 50 | 75 | 87.5 | | 14.41 | 43.22 | 64.84 | 75.64 |
| 3½ | 81.555 | | | 30 | 65 | 82.5 | | | 24.47 | 53.01 | 67.28 |
| 4½ | 76.939 | | | 10 | 55 | 77.5 | | | 7.69 | 42.32 | 59.63 |
| 5½ | 72.584 | | | | 45 | 72.5 | | | | 32.66 | 52.62 |
| 6½ | 68.475 | | | | 35 | 67.5 | | | | 23.97 | 46.22 |
| 7½ | 64.599 | | | | 25 | 62.5 | | | | 16.15 | 40.37 |
| 8½ | 60.943 | | | | 15 | 57.5 | | | | 9.14 | 35.04 |
| 9½ | 57.493 | | | | 5 | 52.5 | | | | 2.87 | 30.18 |
| 10½ | 54.239 | | | | | 47.5 | | | | | 25.76 |
| 11½ | 51.169 | | | | | 42.5 | | | | | 21.74 |
| 12½ | 48.273 | | | | | 37.5 | | | | | 18.10 |
| 13½ | 45.540 | | | | | 32.5 | | | | | 14.80 |
| 14½ | 42.962 | | | | | 27.5 | | | | | 11.81 |
| 15½ | 40.530 | | | | | 22.5 | | | | | 9.12 |
| 16½ | 38.236 | | | | | 17.5 | | | | | 6.69 |
| 17½ | 36.072 | | | | | 12.5 | | | | | 4.51 |
| 18½ | 34.030 | | | | | 7.5 | | | | | 2.55 |
| 19½ | 32.104 | | | | | 2.5 | | | | | .80 |
| Total Discounted Value | | | | | | | 95.76 | 141.17 | 226.94 | 415.13 | 702.33 |
| Of 2 Annuities of $100.00 Each | | | 188.868 | | | | Divided by Total Discounted Value of Annuities | | | | |
| 3 do. | | | 275.216 | | | | 50.73 | | | | |
| 5 do. | | | 433.710 | | | | | 51.29 | | | |
| 10 do. | | | 757.804 | | | | | | 52.33 | | |
| 20 do. | | | 1,180.959 | | | | | | | 54.78 | |
| | | | | | | | | | | | 59.47 |

**TABLE IV**

$$I = \frac{c\left(1-\frac{1}{2n}\right)\frac{1}{\frac{1}{2}}_q + c\left(1-\frac{3}{2n}\right)\frac{1}{\frac{3}{2}}_q + c\left(1-\frac{5}{2n}\right)\frac{1}{\frac{5}{2}}_q + \ldots c\left(1-\frac{2n-1}{2n}\right)\frac{1}{\frac{2n-1}{2}}_q}{\frac{1}{\frac{1}{2}}_q + \frac{1}{\frac{3}{2}}_q + \frac{1}{\frac{5}{2}}_q + \ldots\ldots\ldots \frac{1}{\frac{2n-1}{2}}_q}$$

The number of terms to be added above and below the line equals the number of n. The letters have the following meaning:

C = cost
n = years of useful life
$q = 1 + \frac{i}{100}$
$i$ = interest rate
I = invested capital

of each year until the end of the useful life. The amount of the annuity is the invested capital. The interest to be applied should be the rate of long-term loans.

*Table II* shows present values and annuities for different periods of useful life computed at 6% interest rate. (The computation is shown in *Table III.*) The amount of the annuity is the capital invested for an item that has cost $100.00. The invested capital will be constant during the entire useful life of the asset item. For the computation of the annuity, the equation shown in *Table IV* can be used.

From the equation can be seen that the invested capital is 50% of cost in case n equals 1. In case n becomes infinite, the invested capital equals cost. This is a reasonable result. For instance, the capital invested in a tool that has a useful life of one year is 50% of cost in the average of the year and the capital invested in land, which for practical purposes has an eternal useful life, is 100% of cost. If i becomes zero, I is 50% of cost which is a reasonable result again. For, if interest is neglected, there would be 50% of cost invested in the item in the average of all years of useful life, provided that the scrap value is neglected, which is assumed here. A higher interest rate will result in higher amounts of invested capital. Should i become very high, the invested capital will always be less than 100% of cost, whatever the period of useful life may be (except n becomes infinite).

In order to apply the above described method, it is necessary to decide first upon the interest rate to be used. The next step will be to establish a table of the amounts of invested capital for items of $100.00 cost for all possible periods of useful life —as shown in *Table III.* The cost of all asset items that have the same useful life will then be added and the total will be multiplied by the percentage rate of invested capital computed in the table.

* * *

Dr. Guenter Zimmermann, wirtschaftspruefer, was a public accountant in Germany for 11 years. He visited the United States in 1955 to study American accounting methods and returned in 1956 to spend over a year, during which he was employed by the American subsidiary of a German corporation and by Haskins & Sells. He is the author of an article on "Short-term Forecasts in Industrial Companies" published in the May 1958 issue of the *Journal of Accountancy.* He is now working in Germany in the field of management consulting and accounting.

**Readers of THE CONTROLLER are invited to express their reactions to articles appearing within our pages. Letters will be welcomed for inclusion on this page and must bear the writer's signature and address (which will be withheld if so requested). The Editors**

# Scanning the Scene

## Space Accounting

*The following guest editorial is from the pen of Edward J. Gesick, vice president-secretary, Southwest Research Institute, San Antonio, Texas, whose by-line has appeared in our pages over the years, most recently in the April 1956 issue of* THE CONTROLLER *in which his article entitled* "Cost Control for Research" *was published.*

* * *

Nothing in business literature indicates that any vice president in charge of Forward Planning has expressed his views on doing business on new planets or satellites. There is a question as to whether the recession has caused attrition in the ranks of vice presidents for Forward Planning, who now probably spend all their time trying to explain what happened in the recent past, or perhaps weren't given any time to do any explaining except to the State Unemployment Commission. Nevertheless, chief executives of corporations are cautioned that hasty action in terminating vice presidents for Forward Planning might be detrimental and competitors might get a big jump in planning for the business of tomorrow.

It is difficult to visualize which business man will visit the outer space planet first. It could be an oil man offering a 50-50 net profit split for drilling rights on all land and off-shore rights surrounding any continent on the planet, or it could be a road equipment salesman of the Alexander Botts type trying to get in first with his equipment. A third alternative would be a farmer seeking a new homestead, but, in any event, we do know that among the first arrivals on any new planet will be a salesman, and chances are he will probably be preceded by a representative of the Point Four Program of the Government seeking to assist in the development of underdeveloped areas.

Now here is where the vice president for Forward Planning comes in, and he must work very closely with the controller of his corporation and make plans for the paperwork that must accompany any business to be done with the planet.* The number one problem will be, of course, the re-entry problem since it is presumed that equipment and personnel will be delivered to the planet in the future in routine fashion but, as we know, business cannot exist without paperwork and, of course, the first problem that arises is what is going to be used for money. If it is paper money, how will such paper money withstand the re-entry problem since all the research going on has to do with metals and human beings being launched into space? Planets also may have a currency new and strange to us and perhaps this problem can be solved through the use of counterpart funds or arrangements can be made with an Intraworld Export and Import Bank, which undoubtedly will have to come into being.

If we presume the money problem can be handled, then the question will arise as to invoicing and service records. This cannot, due to our free enterprise type of system, be handled through an Intraworld agency and this is a problem which must be attacked in full force. Controllers, therefore, must start reading scientific literature on material which will withstand the climate and possibly have to replace paper with cloth or wood, metal, or plastic. This, of course, will create an interesting problem in punched card accounting, but we can assume that IBM will create a new electronic monster to handle this. Magnetic tape is ruled out due to the difficulties that undoubtedly will be encountered in being so far from the magnetic poles and atmospheres.

The above are some of the most obvious ideas of paperwork problems which must be planned for and solved, but a million other accounting and controller problems will arise. Some of these are listed below:

1. *How is it going to be possible to check a salesman's entertainment expenses?*

One way of doing this, of course, would be to get the Diners' Club into the act and put everything on a charge basis giving them the responsibility for doing this accounting, but we don't know whether the Diners' Club has a vice president in charge of Forward Planning and is ready to handle this problem. In any event, this would be a good spot for an enterprising individual to look into. Some expense accounts should be extremely interesting.

2. *How is an auditor going to take an inventory and conduct his audit on a new planet and what auditing firm is agreeable to sending its man up?*

Auditing firms are known to be very conservative and render an outstanding service to investors in American industry, but certainly the public cannot tolerate qualified inventory statements from outer space, signed by individuals unknown to company representatives.

3. *What insurance company is going to issue travel insurance for trips to outer space and will their policies permit you to deviate from the course?*

At this point, it appears that the cost of doing business with outer space might become very expensive but free enterprise conquered the Indian and developed this country so it is presumed that some solution to this problem will be found.

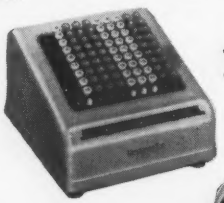
4. *How will tax bills from the local assessor on the outer space planets be checked and how will valuations be determined?*

It is entirely possible that the planet might have a taxing system that, indeed, is out of this world, but, on the other hand, it may be a very simple structure which would be no problem at all. A real problem could arise, if there are many countries on a planet, each with its own taxing system. Let us hope they have observed our planet's difficulties in this regard and have a simplified tax structure, free from withholding taxes, excess profits taxes, land and personal property taxes, sales taxes, ad valorem, etc., etc., etc.

* * *

In conclusion, it now appears to me that possibly the first person to send up before business in outer space is established is the controller of the corporation and, therefore, I urge all alert, aggressive, young controllers to obtain all the scientific literature on space research for bedtime reading. There certainly seems to be a future to it!

* Unlike some of your other articles, I am unable to furnish forms and schedules to accompany this article.—THE AUTHOR

"Know what Mr. Burns said when he saw the price tag on BURROUGHS Calculators? Each of us girls is going to get one! Now watch the  figures fly and the reports roll out on time. Instant-action keys and simplified keyboards, here we come!"

Burroughs is TM.



There's a Burroughs Calculator—electric-powered or hand-operated—just right for your high-volume figuring. Call our nearest branch for a demonstration or write Burroughs Corporation, Burroughs Division, Detroit 32, Mich.

# Capital Expenditure Evaluation

Frank Schwab, Jr.

*An analysis of pros and cons of various methods for making capital expenditure decisions*

THE MAIN PURPOSE of this article* is to advance certain basic principles regarding the evaluation of capital expenditures. As a necessary concomitant the author proposes to show, through quantitative examples, how these principles can be applied to alternative investment problems.

## I SURVEY

The writer has recently conducted a survey of the capital expenditure practices of 75 of the 500 largest corporations in the United States. The firms polled were drawn from five industries: automobile, oil, steel, paper and textile. The most significant question, within this article's scope, dealt with the actual method employed by each individual firm in evaluating new capital expenditures. The answers to this question are as follows:

| *Method* | *Number* | *% to Total* |
|---|---|---|
| A. Payout | 7 | 24% |
| B. Rate of return (unadjusted) | 6 | 20% |
| C. Rate of return (time adjusted) | 4 | 13% |
| D. Combination of all three | 13 | 43% |
| Total | 30** | 100% |

This brief tabulation indicates that the most common method employed was a combination of payout, unadjusted and time adjusted rates of return. Most of the companies reporting grouped their capital expenditures into certain categories and then employed the method they thought most suitable. Since only 13% of the reporting companies used time adjusted rate of return as the chief yardstick it appears that this method has not gained the complete confidence of top management. It is my intention to demonstrate that a workable time adjusted rate of return method can be developed and implemented and that its successful application will guarantee optimum utilization of capital resources.

## II GENERAL INVESTMENT CONSIDERATIONS

Before discussing the disadvantages inherent in many current practices and the advantages to be gained from adopting a time adjusted rate of return method, it might prove advisable to set forth the criteria which are inherent in good capital expenditure management.

A. A provision for *realistic comparisons* of one or more alternative investment choices.

B. An estimate of the *economic life* of the investment so that earnings may be measured over the investment's entire anticipated earning life.

C. The existence of a *cost of capital figure* representing the three components of a company's total invested capital—long-term debt, equity stock and retained earnings.

D. A carefully considered *range of earnings* set forth on an annual basis for each proposed investment.

E. A listing of the *amount and timing of the cash outlays* needed for the investment.

F. A use of mathematical formulae (*Tables A* and *B*) to *evaluate the effect of the timing of the cash inflow and outlay* so that near year earnings will be weighted more heavily than money received further in the future.

G. A program for *comparing the actual savings* and investment figures *with the original estimates.*

H. The use of simple and accurate *forms and procedures* so that the essential information can be relayed in a concise format to the executive or executives making the decisions.

I. A thorough *indoctrination* of all levels of management that will be required to initiate, analyze and interpret the results of the capital expenditure program.

It is readily apparent that no article can hope to cover each of the above areas in detail; therefore, the main analytical effort of this paper will be aimed at (a) discussing the most used quantitative tool—payout, (b) showing the advantages to be derived from using a rate of return instead of payout, and (c) illustrating how the method can be applied to actual alternative investment problems.

## III PRESENT METHODS

The most common capital evaluation tool in current use is the payback or payout method. However, it should be noted that some firms do not use any quantitative measurements, but rather

FRANK SCHWAB, JR., management engineer with the Champion Paper and Fibre Company, Pasadena, Texas, received his A.B. from Rutgers University and his M.B.A. from Harvard Business School. From 1952-54 he served in the U.S. Army. This paper was presented before the Houston Chapter of the Systems and Procedures Association of which Mr. Schwab is research director.

* The author is grateful for the assistance rendered by Jesse Rogers, The Champion Paper and Fibre Company; Jack Williams and Dave Pickhardt, Continental Oil Company; Jim Beck, Humble Oil and Refining Company; the Houston Chapter, Systems and Procedures Association; and the Control Staff of the Harvard Business School.

** This figure reflects the number of answers received as of May 26, 1958.

## TABLE A

### Present Value of $1.00

| Years hence | 1% | 2% | 4% | 6% | 8% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 22% | 24% | 25% | 26% | 28% | 30% | 35% | 40% | 45% | 50% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .990 | .980 | .962 | .943 | .926 | .909 | .893 | .877 | .870 | .862 | .847 | .833 | .820 | .806 | .800 | .794 | .781 | .769 | .741 | .714 | .690 | .667 |
| 2 | .980 | .961 | .925 | .890 | .857 | .826 | .797 | .769 | .756 | .743 | .718 | .694 | .672 | .650 | .640 | .630 | .610 | .592 | .549 | .510 | .476 | .444 |
| 3 | .971 | .942 | .889 | .840 | .794 | .751 | .712 | .675 | .658 | .641 | .609 | .579 | .551 | .524 | .512 | .500 | .477 | .455 | .406 | .364 | .328 | .296 |
| 4 | .961 | .924 | .855 | .792 | .735 | .683 | .636 | .592 | .572 | .552 | .516 | .482 | .451 | .423 | .410 | .397 | .373 | .350 | .301 | .260 | .226 | .198 |
| 5 | .951 | .906 | .822 | .747 | .681 | .621 | .567 | .519 | .497 | .476 | .437 | .402 | .370 | .341 | .328 | .315 | .291 | .269 | .223 | .186 | .156 | .132 |
| 6 | .942 | .888 | .790 | .705 | .630 | .564 | .507 | .456 | .432 | .410 | .370 | .335 | .303 | .275 | .262 | .250 | .227 | .207 | .165 | .133 | .108 | .088 |
| 7 | .933 | .871 | .760 | .665 | .583 | .513 | .452 | .400 | .376 | .354 | .314 | .279 | .249 | .222 | .210 | .198 | .178 | .159 | .122 | .095 | .074 | .059 |
| 8 | .923 | .853 | .731 | .627 | .540 | .467 | .404 | .351 | .327 | .305 | .266 | .233 | .204 | .179 | .168 | .157 | .139 | .123 | .091 | .068 | .051 | .039 |
| 9 | .914 | .837 | .703 | .592 | .500 | .424 | .361 | .308 | .284 | .263 | .225 | .194 | .167 | .144 | .134 | .125 | .108 | .094 | .067 | .048 | .035 | .026 |
| 10 | .905 | .820 | .676 | .558 | .463 | .386 | .322 | .270 | .247 | .227 | .191 | .162 | .137 | .116 | .107 | .099 | .085 | .073 | .050 | .035 | .024 | .017 |
| 11 | .896 | .804 | .650 | .527 | .429 | .350 | .287 | .237 | .215 | .195 | .162 | .135 | .112 | .094 | .086 | .079 | .066 | .056 | .037 | .025 | .017 | .012 |
| 12 | .887 | .788 | .625 | .497 | .397 | .319 | .257 | .208 | .187 | .168 | .137 | .112 | .092 | .076 | .069 | .062 | .052 | .043 | .027 | .018 | .012 | .008 |
| 13 | .879 | .773 | .601 | .469 | .368 | .290 | .229 | .182 | .163 | .145 | .116 | .093 | .075 | .061 | .055 | .050 | .040 | .033 | .020 | .013 | .008 | .005 |
| 14 | .870 | .758 | .577 | .442 | .340 | .263 | .205 | .160 | .141 | .125 | .099 | .078 | .062 | .049 | .044 | .039 | .032 | .025 | .015 | .009 | .006 | .003 |
| 15 | .861 | .743 | .555 | .417 | .315 | .239 | .183 | .140 | .123 | .108 | .084 | .065 | .051 | .040 | .035 | .031 | .025 | .020 | .011 | .006 | .004 | .002 |
| 16 | .853 | .728 | .534 | .394 | .292 | .218 | .163 | .123 | .107 | .093 | .071 | .054 | .042 | .032 | .028 | .025 | .019 | .015 | .008 | .005 | .003 | .002 |
| 17 | .844 | .714 | .513 | .371 | .270 | .198 | .146 | .108 | .093 | .080 | .060 | .045 | .034 | .026 | .023 | .020 | .015 | .012 | .006 | .003 | .002 | .001 |
| 18 | .836 | .700 | .494 | .350 | .250 | .180 | .130 | .095 | .081 | .069 | .051 | .038 | .028 | .021 | .018 | .016 | .012 | .009 | .005 | .002 | .001 | .001 |
| 19 | .828 | .686 | .475 | .331 | .232 | .164 | .116 | .083 | .070 | .060 | .043 | .031 | .023 | .017 | .014 | .012 | .009 | .007 | .003 | .002 | .001 | |
| 20 | .820 | .673 | .456 | .312 | .215 | .149 | .104 | .073 | .061 | .051 | .037 | .026 | .019 | .014 | .012 | .010 | .007 | .005 | .002 | .001 | .001 | |
| 21 | .811 | .660 | .439 | .294 | .199 | .135 | .093 | .064 | .053 | .044 | .031 | .022 | .015 | .011 | .009 | .008 | .006 | .004 | .002 | .001 | | |
| 22 | .803 | .647 | .422 | .278 | .184 | .123 | .083 | .056 | .046 | .038 | .026 | .018 | .013 | .009 | .007 | .006 | .004 | .003 | .001 | .001 | | |
| 23 | .795 | .634 | .406 | .262 | .170 | .112 | .074 | .049 | .040 | .033 | .022 | .015 | .010 | .007 | .006 | .005 | .003 | .002 | .001 | | | |
| 24 | .788 | .622 | .390 | .247 | .158 | .102 | .066 | .043 | .035 | .028 | .019 | .013 | .008 | .006 | .005 | .004 | .003 | .002 | .001 | | | |
| 25 | .780 | .610 | .375 | .233 | .146 | .092 | .059 | .038 | .030 | .024 | .016 | .010 | .007 | .005 | .004 | .003 | .002 | .001 | .001 | | | |
| 26 | .772 | .598 | .361 | .220 | .135 | .084 | .053 | .033 | .026 | .021 | .014 | .009 | .006 | .004 | .003 | .002 | .002 | .001 | | | | |
| 27 | .764 | .586 | .347 | .207 | .125 | .076 | .047 | .029 | .023 | .018 | .011 | .007 | .005 | .003 | .002 | .002 | .001 | .001 | | | | |
| 28 | .757 | .574 | .333 | .196 | .116 | .069 | .042 | .026 | .020 | .016 | .010 | .006 | .004 | .002 | .002 | .002 | .001 | .001 | | | | |
| 29 | .749 | .563 | .321 | .185 | .107 | .063 | .037 | .022 | .017 | .014 | .008 | .005 | .003 | .002 | .002 | .001 | .001 | .001 | | | | |
| 30 | .742 | .552 | .308 | .174 | .099 | .057 | .033 | .020 | .015 | .012 | .007 | .004 | .003 | .002 | .001 | .001 | .001 | | | | | |
| 40 | .672 | .453 | .208 | .097 | .046 | .022 | .011 | .005 | .004 | .003 | .001 | .001 | | | | | | | | | | |
| 50 | .608 | .372 | .141 | .054 | .021 | .009 | .003 | .001 | .001 | .001 | | | | | | | | | | | | |

Copyright 1955 by the President and Fellows of Harvard College.

judge each proposed investment on a variety of qualitative considerations. Since judgment of this type is less effective than payout, I shall not attempt to evaluate its advantages and disadvantages, but rather shall focus the discussion on payout.

Before discussing the advantages and disadvantages of payout as an aid to capital expenditure evaluation it is important to note that reasons other than immediate cash flow sometimes prove to be the overriding considerations in capital expenditure decisions. Examples of this type consideration include maintenance of the company's share of the market, achievement of sales growth, the gain of reputation and status, intangible organization benefits, etc. The drawbacks inherent in the use of the present payback method include:

A. Failure to consider the earnings of a project after the initial outlay has been paid back. The amount of time the earnings will last after the company has recovered its bait is what really determines the profitability of the investment. Thus, a three-year payback project might yield a 35% return on average investment if it has a long life, but only 13% in four years and nothing in three years.

B. Capital wastage or obsolescence, which is the gradual loss of the economic value of the equipment over a period of time, is not considered. Thus, the economic life of the project is not quantitatively included in the computation.

C. Too much emphasis is put on liquidity as a goal of the capital expenditure program. Certainly in an era of a tight money market this is an important consideration; however, not to the extent where future profits may be jeopardized.

Since the heart of good capital expenditure management is a quantitative yardstick which will allow management to realistically measure the investment worth and net earnings of each individual or group of proposals, the use of payout would be appropriate in certain situations, as follows:

A. Payback can serve as a blunt instrument to select extremely desirable high-profit projects and reject those proposals which are obviously unprofitable.

B. It can be a good measuring device if a company finds it extremely difficult to generate cash either internally or externally and is forced to accept only proposals which promise a payback period of two years or less.

C. Payout can be useful in appraising risky investments where the rate of capital wastage is hard to predict. In addition, the company is protecting itself against a short economic life because the payback method weights near year earnings heavily while distant earnings are ignored.

From the previous analysis it may be assumed that payback does not measure or reflect all the facets of profitability pertinent to capital expenditure decisions; therefore, since it does not appear to measure or take into account certain vital areas it should not be used (except in the situations described in IIIA-C) as a company's over-all measure of investment worth.

## IV RATES OF RETURN

In general, there are two major kinds of measurement devices which result in an answer showing a percentage return—the unadjusted and time adjusted rates of return. Adoption of the former poses certain real drawbacks which will be pointed out later in the discussion. Therefore, the advantages of employing the rate of return method, which are listed below, refer mainly to the time adjusted or discounted rate of return:

A. The time adjusted rate of return relates the project's anticipated earnings to the amount of funds which will be tied up during the investment life of the equipment. The use of payout can sometimes lead to erroneous conclusions; the best example of this being the following experience by an oil company:

"Certain refinery equipment that showed a three-year payback actually became obsolete and was replaced in three years. The project's rate of return, therefore, was zero despite what appeared to be a very satisfactory payback. In contrast, a pipeline that had the same three-year payback kept on earning (and promises to continue for 20 years more). Clearly the rate of return was much higher."

B. Since rate of return measures the full life of the investment proposal, realistic comparisons can be made between the present set-up and the proposed investment or investments. Even though the projects under consideration may differ widely in original cost, method of financing, economic life, output, maintenance, etc., comparison is still possible as the end-result of a rate of return computation is always a per cent. Furthermore, the rate of return for each individual project can be compared with the amount that the firm earns on its total invested capital. Thus

## TABLE B

### Present value of $1.00 received annually for "n" years

| Years (N) | 1% | 2% | 4% | 6% | 8% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 22% | 24% | 25% | 26% | 28% | 30% | 35% | 40% | 45% | 50% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .990 | .980 | .962 | .943 | .926 | .909 | .893 | .877 | .870 | .862 | .847 | .833 | .820 | .806 | .800 | .794 | .781 | .769 | .741 | .714 | .690 | .667 |
| 2 | 1.970 | 1.942 | 1.886 | 1.833 | 1.783 | 1.736 | 1.690 | 1.647 | 1.626 | 1.605 | 1.566 | 1.528 | 1.492 | 1.457 | 1.440 | 1.424 | 1.392 | 1.361 | 1.289 | 1.224 | 1.165 | 1.111 |
| 3 | 2.941 | 2.884 | 2.775 | 2.673 | 2.577 | 2.487 | 2.402 | 2.322 | 2.283 | 2.246 | 2.174 | 2.106 | 2.042 | 1.981 | 1.952 | 1.923 | 1.868 | 1.816 | 1.696 | 1.589 | 1.493 | 1.407 |
| 4 | 3.902 | 3.808 | 3.630 | 3.465 | 3.312 | 3.170 | 3.037 | 2.914 | 2.855 | 2.798 | 2.690 | 2.589 | 2.494 | 2.404 | 2.362 | 2.320 | 2.241 | 2.166 | 1.997 | 1.849 | 1.720 | 1.605 |
| 5 | 4.853 | 4.713 | 4.452 | 4.212 | 3.993 | 3.791 | 3.605 | 3.433 | 3.352 | 3.274 | 3.127 | 2.991 | 2.864 | 2.745 | 2.689 | 2.635 | 2.532 | 2.436 | 2.220 | 2.035 | 1.876 | 1.737 |
| 6 | 5.795 | 5.601 | 5.242 | 4.917 | 4.623 | 4.355 | 4.111 | 3.889 | 3.784 | 3.685 | 3.498 | 3.326 | 3.167 | 3.020 | 2.951 | 2.885 | 2.759 | 2.643 | 2.385 | 2.168 | 1.983 | 1.824 |
| 7 | 6.728 | 6.472 | 6.002 | 5.582 | 5.206 | 4.868 | 4.564 | 4.288 | 4.160 | 4.039 | 3.812 | 3.605 | 3.416 | 3.242 | 3.161 | 3.083 | 2.937 | 2.802 | 2.508 | 2.263 | 2.057 | 1.883 |
| 8 | 7.652 | 7.325 | 6.733 | 6.210 | 5.747 | 5.335 | 4.968 | 4.639 | 4.487 | 4.344 | 4.078 | 3.837 | 3.619 | 3.421 | 3.329 | 3.241 | 3.076 | 2.925 | 2.598 | 2.331 | 2.108 | 1.922 |
| 9 | 8.566 | 8.162 | 7.435 | 6.802 | 6.247 | 5.759 | 5.328 | 4.946 | 4.772 | 4.607 | 4.303 | 4.031 | 3.786 | 3.566 | 3.463 | 3.366 | 3.184 | 3.019 | 2.665 | 2.379 | 2.144 | 1.948 |
| 10 | 9.471 | 8.983 | 8.111 | 7.360 | 6.710 | 6.145 | 5.650 | 5.216 | 5.019 | 4.833 | 4.494 | 4.192 | 3.923 | 3.682 | 3.571 | 3.465 | 3.269 | 3.092 | 2.715 | 2.414 | 2.168 | 1.965 |
| 11 | 10.368 | 9.787 | 8.760 | 7.887 | 7.139 | 6.495 | 5.938 | 5.453 | 5.234 | 5.029 | 4.656 | 4.327 | 4.035 | 3.776 | 3.656 | 3.544 | 3.335 | 3.147 | 2.752 | 2.438 | 2.185 | 1.977 |
| 12 | 11.255 | 10.575 | 9.385 | 8.384 | 7.536 | 6.814 | 6.194 | 5.660 | 5.421 | 5.197 | 4.793 | 4.439 | 4.127 | 3.851 | 3.725 | 3.606 | 3.387 | 3.190 | 2.779 | 2.456 | 2.196 | 1.985 |
| 13 | 12.134 | 11.343 | 9.986 | 8.853 | 7.904 | 7.103 | 6.424 | 5.842 | 5.583 | 5.342 | 4.910 | 4.533 | 4.203 | 3.912 | 3.780 | 3.656 | 3.427 | 3.223 | 2.799 | 2.468 | 2.204 | 1.990 |
| 14 | 13.004 | 12.106 | 10.563 | 9.295 | 8.244 | 7.367 | 6.628 | 6.002 | 5.724 | 5.468 | 5.008 | 4.611 | 4.265 | 3.962 | 3.824 | 3.695 | 3.459 | 3.249 | 2.814 | 2.477 | 2.210 | 1.993 |
| 15 | 13.865 | 12.849 | 11.118 | 9.712 | 8.559 | 7.606 | 6.811 | 6.142 | 5.847 | 5.575 | 5.092 | 4.675 | 4.315 | 4.001 | 3.859 | 3.726 | 3.483 | 3.268 | 2.825 | 2.484 | 2.214 | 1.995 |
| 16 | 14.718 | 13.578 | 11.652 | 10.106 | 8.851 | 7.824 | 6.974 | 6.265 | 5.954 | 5.669 | 5.162 | 4.730 | 4.357 | 4.033 | 3.887 | 3.751 | 3.503 | 3.283 | 2.834 | 2.489 | 2.216 | 1.997 |
| 17 | 15.562 | 14.292 | 12.166 | 10.477 | 9.122 | 8.022 | 7.120 | 6.373 | 6.047 | 5.749 | 5.222 | 4.775 | 4.391 | 4.059 | 3.910 | 3.771 | 3.518 | 3.295 | 2.840 | 2.492 | 2.218 | 1.998 |
| 18 | 16.398 | 14.992 | 12.659 | 10.828 | 9.372 | 8.201 | 7.250 | 6.467 | 6.128 | 5.818 | 5.273 | 4.812 | 4.419 | 4.080 | 3.928 | 3.786 | 3.529 | 3.304 | 2.844 | 2.494 | 2.219 | 1.999 |
| 19 | 17.226 | 15.678 | 13.134 | 11.158 | 9.604 | 8.365 | 7.366 | 6.550 | 6.198 | 5.877 | 5.316 | 4.844 | 4.442 | 4.097 | 3.942 | 3.799 | 3.539 | 3.311 | 2.848 | 2.496 | 2.220 | 1.999 |
| 20 | 18.046 | 16.351 | 13.590 | 11.470 | 9.818 | 8.514 | 7.469 | 6.623 | 6.259 | 5.929 | 5.353 | 4.870 | 4.460 | 4.110 | 3.954 | 3.808 | 3.546 | 3.316 | 2.850 | 2.497 | 2.221 | 1.999 |
| 21 | 18.857 | 17.011 | 14.029 | 11.764 | 10.017 | 8.649 | 7.562 | 6.687 | 6.312 | 5.973 | 5.384 | 4.891 | 4.476 | 4.121 | 3.963 | 3.816 | 3.551 | 3.320 | 2.852 | 2.498 | 2.221 | 2.000 |
| 22 | 19.660 | 17.658 | 14.451 | 12.042 | 10.201 | 8.772 | 7.645 | 6.743 | 6.359 | 6.011 | 5.410 | 4.909 | 4.488 | 4.130 | 3.970 | 3.822 | 3.555 | 3.323 | 2.853 | 2.498 | 2.222 | 2.000 |
| 23 | 20.456 | 18.292 | 14.857 | 12.303 | 10.371 | 8.883 | 7.718 | 6.792 | 6.399 | 6.044 | 5.432 | 4.925 | 4.499 | 4.137 | 3.976 | 3.827 | 3.559 | 3.325 | 2.854 | 2.499 | 2.222 | 2.000 |
| 24 | 21.243 | 18.914 | 15.247 | 12.550 | 10.529 | 8.985 | 7.784 | 6.835 | 6.434 | 6.073 | 5.451 | 4.937 | 4.507 | 4.143 | 3.981 | 3.831 | 3.562 | 3.327 | 2.855 | 2.499 | 2.222 | 2.000 |
| 25 | 22.023 | 19.523 | 15.622 | 12.783 | 10.675 | 9.077 | 7.843 | 6.873 | 6.464 | 6.097 | 5.467 | 4.948 | 4.514 | 4.147 | 3.985 | 3.834 | 3.564 | 3.329 | 2.856 | 2.499 | 2.222 | 2.000 |
| 26 | 22.795 | 20.121 | 15.983 | 13.003 | 10.810 | 9.161 | 7.896 | 6.906 | 6.491 | 6.118 | 5.480 | 4.956 | 4.520 | 4.151 | 3.988 | 3.837 | 3.566 | 3.330 | 2.856 | 2.500 | 2.222 | 2.000 |
| 27 | 23.560 | 20.707 | 16.330 | 13.211 | 10.935 | 9.237 | 7.943 | 6.935 | 6.514 | 6.136 | 5.492 | 4.964 | 4.524 | 4.154 | 3.990 | 3.839 | 3.567 | 3.331 | 2.856 | 2.500 | 2.222 | 2.000 |
| 28 | 24.316 | 21.281 | 16.663 | 13.406 | 11.051 | 9.307 | 7.984 | 6.961 | 6.534 | 6.152 | 5.502 | 4.970 | 4.528 | 4.157 | 3.992 | 3.840 | 3.568 | 3.331 | 2.857 | 2.500 | 2.222 | 2.000 |
| 29 | 25.066 | 21.844 | 16.984 | 13.591 | 11.158 | 9.370 | 8.022 | 6.983 | 6.551 | 6.166 | 5.510 | 4.975 | 4.531 | 4.159 | 3.994 | 3.841 | 3.569 | 3.332 | 2.857 | 2.500 | 2.222 | 2.000 |
| 30 | 25.808 | 22.396 | 17.292 | 13.765 | 11.258 | 9.427 | 8.055 | 7.003 | 6.566 | 6.177 | 5.517 | 4.979 | 4.534 | 4.160 | 3.995 | 3.842 | 3.569 | 3.332 | 2.857 | 2.500 | 2.222 | 2.000 |
| 40 | 32.835 | 27.355 | 19.793 | 15.046 | 11.925 | 9.779 | 8.244 | 7.105 | 6.642 | 6.234 | 5.548 | 4.997 | 4.544 | 4.166 | 3.999 | 3.846 | 3.571 | 3.333 | 2.857 | 2.500 | 2.222 | 2.000 |
| 50 | 39.196 | 31.424 | 21.482 | 15.762 | 12.234 | 9.915 | 8.304 | 7.133 | 6.661 | 6.246 | 5.554 | 4.999 | 4.545 | 4.167 | 4.000 | 3.846 | 3.571 | 3.333 | 2.857 | 2.500 | 2.222 | 2.000 |

Copyright 1956 by the President and Fellows of Harvard College.

a priority ladder can be set up, giving executives an idea of which proposal should be initiated first. If this quantitative thinking permeates to middle-management level it might have the effect of killing off many proposals which would show a low rate of return.

C. The rate of return method should also produce more earnings for the stockholders because it directs the flow of funds to their most profitable use.

D. *Other Advantages*—Selection of this method should improve investment decisions and permit more realistic administration of the capital program.

1. *No Alternatives*—In many companies capital appropriation requests do not list any alternatives. Instead, the project is set out by itself and is not compared either with (a) the present method or (b) other proposals which would accomplish the same end such as improving the present method or eliminating the operation altogether and buying the goods or services outside.

For some investments, of course, such as installing an air-conditioning unit, the listing of alternatives, the savings resulting from each one, and their respective rates of return might be ludicrous. But, the alternative of large fans can also be listed. Thus one way of building up earnings or savings in a project which would lend itself to this type analysis would be to consider what would happen if the investment were not made; the resulting loss would be the savings for the project.

2. *Must Investment*—According to the survey depicted in Section I many corporate investment proposals are supported by the statement or thought that certain equipment replacements are indispensable for continuing operations. However, it is my opinion that high-profit or indispensable investments are rarer than realized. Therefore, it appears wise to survey all investment proposals with an extremely critical eye.

Having discussed the advantages inherent in the use of rate of return over payout it should prove useful to briefly survey the ultimate criterion with which all investments are compared—the company's cost of capital. The company's average long-run cost of capital is expressed as a per cent and may therefore be regarded as the break-even point for new capital investments. Projects earning a lower rate of return than the cost of capital bench mark will usually have the effect of reducing a company's earnings per share. Thus any projects of this nature which are approved should be undertaken only when there are very strong nonfinancial, organizational or operational reasons. In order for a company to continue its growth it is mandatory that capital funds be diverted to those projects producing a rate of return higher than its cost of capital.

Since the cost of capital bench mark is the ultimate criterion, close scrutiny should be accorded to the mechanics involved in computation. In general, there are three major methods for computing a company's cost of capital or return on investment:

1. $\dfrac{\text{Net income after taxes}}{\text{Net worth}} = \text{Company's cost of capital or return on investment}$

2. $\dfrac{\text{Net income after taxes and before interest}}{\text{Net worth} + \text{long-term debt (weighted)}} = \text{Company's cost of capital or return on investment}$

3. $\dfrac{\text{Net income after taxes and before interest}}{\text{Net worth (weighted)} + \text{long-term debt (weighted)}} = \text{Company's cost of capital or return on investment}$

The latter method is the best one as it differentiates between the cost to the company of raising funds from (a) retained earnings, (b) equity capital obtained from the sale of common stock, and (c) long-term debt. Let us see how this is done.

A. *Long-Term Debt*—If a company is a large successful one it probably possesses a good credit rating and can therefore secure long-term debt money at an average rate of approximately 4½%. Since interest charges are for tax purposes a deductible expense we can consider that investment funds obtained from long-term debt will have a real (therefore after-tax) cost of about 2¼%.

B. *Equity Capital—(Obtained from sale of common stock)*—The cost of equity capital chargeable to new stock financing is the rate of return which must be earned on this new money so that earnings per share will not be diluted. It should be noted

that the computation which attempts to derive the company's cost of equity capital must consider the most recent market prices of the stock and the current earnings per share.

1. *Known Factors*

| | |
|---|---|
| a. Earnings per share prior to new issue ..... | $ 2.00 |
| b. Market price per share prior to new issue .. | 20.00 |
| c. Shares of new stock sold ..... | 1,000 shares |
| d. Money generated by sale of new stock .... | $20,000.00 |

2. *Computation*

$$\frac{\text{Earnings per share}}{\text{Market value per share}} = 10\% \text{ Rate of return prior to new issue}$$

As the above calculations indicate, Company X must earn $2,000 or 10% return on the new money generated by a stock sale in order to avoid dilution of present earnings per share.

C. *Retained Earnings*—Earnings of this nature are identical to equity stock except that they represent an involuntary investment by the stockholders.

D. *Weighted Cost of Capital*—Having determined the cost to Company X of its individual capital components we are now in a position to establish the average cost of capital. Before making the final computation we shall have to assume one further fact, namely, the amount of money percentagewise that will be generated from each of these three sources. If we estimate that 20% of our funds will come from long-term debt and 80% from equity capital and retained earnings, then the weighted average corporate cost of capital will amount to 8.5%.*

*The figures are computed as follows:

$$\frac{20\%\ (2.25\%) + (80\%)\ (10\%)}{100} = 8.45\%$$

This 8.5% figure should be used as the quantitative yardstick against which all new investments, regardless of the source of funds—long-term debt, sale of new stock, retained earnings or a mixture of the three—should be measured. The reasoning behind this use of a uniform cost of capital bench mark is simply that all new projects are financed from a common pool of investment dollars and that all funds going into this pool have a long-range average, after-tax cost of about 8.5%.

Before discussing the theory inherent in the use of the time adjusted rate of return and the mechanics of computation involved it might prove wise to set forth the chief differences between the unadjusted and time adjusted formulae so that the disadvantages inherent in the unadjusted method are clearly evident. Let us first consider the mechanics of computation and the formula involved and then note the two principal disadvantages:

A. *Formula and Computation*—The formula used by the unadjusted returns method in arriving at a per cent return for individual investment proposals can be stated as follows:

$$\left(\text{OS} - \frac{\text{NI}}{\text{n}}\right) + \frac{\text{NI}}{2} = \text{Unadjusted per cent rate of return}$$

These symbols can be defined as follows:

OS = Operating savings after taxes and before depreciation
NI = Net investment
n = Economic life of the machine
$\frac{\text{NI}}{2}$ = Average investment

In this formula the return is figured as a percentage of the average investment $\frac{\text{NI}}{2}$ rather than as a percentage of the total investment NI because the amount originally invested is gradually released through operations and over the whole life of the asset an average of roughly half the investment is tied up. However, the total investment figure can also be used by simply eliminating the denominator 2.

Using the above-stated formula and assuming that the economic life of the machine is estimated to be ten years, the formula works out as:

$$\left(200 - \frac{1{,}000}{10}\right) + \frac{1{,}000}{2} = 100 \div 500 = 20\%$$

This formula gives a percentage return which means, roughly, that the alternative is more attractive than other possible uses of funds that yield a lower return.

B. *Discounting Future Earnings*—This method attempts to equate a sum of money laid out today and a stream of savings to be realized over a number of years in the future. This is fallacious as the prospect of saving $1,000 in the next year is more attractive than the prospect of saving $1,000 two years from now, in turn this $1,000 is more attractive than the prospect of saving $1,000 three years from now and so on.

C. *Original or Average Investment*—The unadjusted method bases its per cent return on either the original or average investment which means that a company using this formula will receive only an approximation of the true rate of return. When the original investment is employed the return is usually understated, while use of the average investment usually results in overstating the return.

Having explored the benefits inherent in the time adjusted rate of return as a measurement yardstick let us next investigate the basic way of looking at and understanding the method's operation and applicability. It is vital that every user of this method possess insight into the basic philosophy behind the rate of return, as it is virtually impossible to achieve optimum utilization without full understanding of these underlying principles.

To facilitate understanding of the time adjusted rate of return, I propose that we regard the worth of the investment proposal by the net cash flow brought back to present value which the project generates over its entire expected economic life. Thus, we can ignore all terms except those which the Government desires be used in the tax computation, such as depreciation, and think only in terms of money actually coming in or going out of the business. It is this inflow and outflow which really determines the worth of the investment proposal.

Before working out the examples, let us investigate the quantitative tools which assist the analyst in his evaluations (*Tables A* and *B*). *Table A* shows the present value of a dollar received at different times in the future at various rates of discounts. For example, the first figure under the 10% discount column is .909, which means that the present value of $1.00 to be received a year from now is 90.9¢. Stating it another way, 90.9¢ invested at 10% interest today will equal $1.00 at the end of one year and 82.6¢ invested at 10% compound interest today will equal $1.00 at the end of two years, etc.

*Table B* is similar to *Table A* except that it represents the present value of a stream of payments received annually for "n" years. In essence the tables are quite similar except that *Table B* measures a cumulative flow of earnings while *Table A* deals with a single payment. If we add up the first five figures in *Table A* under the 4% heading we arrive at a total of 4.453—this is almost identical with the number 4.452 shown in *Table B* at five years of life and 4%. The slight difference is due to rounding of the factors in addition. The user of *Table B* must clearly comprehend one real drawback in its employment—it can only be used when the savings are uniform and all the investment funds are committed at the outset of the investment's life. Any alternative investment problem differing from this situation requires the use of *Table A* in establishing a per cent rate of return.

In using *Tables A* and *B* the analyst must gather certain information before a rate of return computation can be effected

*(Continued on page 364)*

# IS FRIDEN TAPE-TALK THE BIGGEST OFFICE CHANGE OF OUR TIME?

Computyper® Automatic tape billing department in one desk

Selectadata® Automatic tape reader-selector-sorter

Teledata® Automatic tape transmitter-receiver

Justowriter® Automatic justifying type-composing machine

Add-Punch® Automatic code tape adding-listing machine

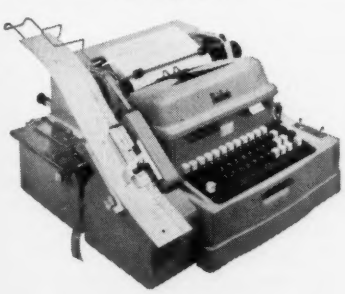
Flexowriter® Automatic tape writing-accounting machine

Automatic Input-Output Machine

Friden Natural Way Adding Machine

Friden fully automatic Calculator—
The Thinking Machine of American Business

Friden Mailroom Equipment



**Friden Creates A New World For Business**

YES, unquestionably. No other office development in years affects so many offices both large and small, and so many types of business.

While office procedures and functions remain much as always, Friden has introduced a radically new way of carrying them out: *Everything goes on punched paper tape!*

When you see a Friden Tape-Talk unit in action...you realize some of the unlimited possibilities for applications to *your* office paperwork.

And you see how Friden automatic machines, with their new "common language," can work and think *together* for swift production at lower costs.

Friden Tape-Talk machines can automate your office in *any* desired degree... (1) eliminate need for manual movements and operator decisions... (2) increase work output without increasing payroll costs or overtime... (3) end errors normally occurring in data recopying.

Call your nearby Friden Man or write Friden, Inc., San Leandro, California... sales, instruction, service throughout U.S. and the world.

# Friden *has the System*

© Friden, Inc.

for alternative investment problems; thus he must know the following basic facts for each separate alternative:

A. Amount and timing of investment.
B. Amount and timing of savings.
C. Company's cost of capital or return on investment.

Let us now observe some actual examples:

**(Even savings and even investment)**
**TIME ADJUSTED RATE OF RETURN**

| | | |
|---|---|---|
| Proposed investment | | $670 |
| Economic life* | 5 years | |
| Annual income after tax and before depreciation† | | $200 |

1. Using *Table A*

| *Time Period* | *Annual Income* | *Interest Rate* | *Discount Factor* | *Present Value of Yearly Income* |
|---|---|---|---|---|
| 1st year | $ 200 | 15% | .870 | $174 |
| 2nd year | 200 | | .756 | 151 |
| 3rd year | 200 | | .658 | 132 |
| 4th year | 200 | | .572 | 114 |
| 5th year | 200 | | .497 | 99 |
| Totals | $1,000 | | | $670 |

2. Using *Table B*

a. Factor $\frac{\text{(Investment) \$670}}{\text{(Savings) \$200}} = 3.350$ factor

b. Table B. The factor of 3.352 can be located on the 5-year row of Table B under the 15% figure. The rate of return then is approximately 15% even.

* For purposes of all these examples, economic life and book life will be the same. In addition, straight-line depreciation will be used.

† Note: Depreciation does indirectly influence cash flow by reducing the amount of actual tax paid to the Government. This computation is shown in Appendix B. (Page 393)

In this example we discovered that, for situations in which the income or savings is uniform over the project's entire life and the investment is committed at the outset, both *Tables A* and *B* can be used. In situations of this nature, the use of *Table B* is recommended since the cumulative effect of the discount saves the analyst computation time. Moreover, determination of the discount factor will not be a matter of trial and error as in the case of uneven savings, but can be obtained by merely dividing the savings into the investment, locating the resulting factor on the appropriate year's column and reading upward to the discount per cent.

Let us next consider investments which produce income in differing amounts over various time periods. In illustrating the vital importance of timing in the generating of cash we shall, in the next example, compare two investment alternatives. The detailed explanation involving the mechanics of computation will be listed after the actual examples.

## BIBLIOGRAPHY


Dean, Joel, *Capital Budgeting,* New York, Columbia University Press, 1951.

—*Managerial Economics,* New York, Prentice-Hall. Inc.

—"Measuring the Productivity of Capital," *Harvard Business Review,* January-February, 1954.

Grant, Eugene L., *Principles of Engineering Economy,* New York Ronald Press Company, 1950.

Terborgh, George, *Dynamic Equipment Policy,* New York, McGraw-Hill Book Company, Inc., 1949.

MAPI Replacement Manual, Machinery and Allied Products Institute. 1950.


**(Uneven savings and even investment)**
**DATA COMMON TO BOTH INVESTMENTS A AND B**

| | | |
|---|---|---|
| Proposed investment | | $16,000 |
| Economic life | 5 years | |
| Total cash generated after tax and before depreciation | | $24,000 |

1. *Investment A*

| *Time Period* | *Annual Income* | *Interest Rate** | *Discount Factor* | *Present Value of Yearly Income* |
|---|---|---|---|---|
| 1st year | $ 2,000 | 16% | .862 | $ 1,724 |
| 2nd year | 8,000 | | .743 | 5,944 |
| 3rd year | 7,000 | | .641 | 4,487 |
| 4th year | 6,000 | | .552 | 3,312 |
| 5th year | 1,000 | | .476 | 476 |
| Totals | $24,000 | | | $15,943 |

2. *Investment B*

| *Time Period* | *Annual Income* | *Interest Rate** | *Discount Factor* | *Present Value of Yearly Income* |
|---|---|---|---|---|
| 1st year | $ 6,000 | 14% | .877 | $ 5,262 |
| 2nd year | 3,000 | | .769 | 2,307 |
| 3rd year | 2,000 | | .675 | 1,350 |
| 4th year | 5,000 | | .592 | 2,960 |
| 5th year | 8,000 | | .519 | 4,152 |
| Totals | $24,000 | | | $16,031 |

* From Table A.

The important thing to be noted here is that the income from Investment A produces a 16% time adjusted rate of return, while that generated by Investment B only produces a 14% return. Thus, even though the total cash income is the same in both alternatives, the timing or the cash flow clearly points up, from a quantitative viewpoint, Investment A's attractiveness.

In terms of the actual mechanics, the analyst using this method is advised to take the following steps:

A. *Objective*—Realize the objective which, in this particular situation, is to bring back to present value the future inflow of cash so that it equals the cash outlay or investment. The per cent discount factor which will make savings equal investment is the rate of return for the project.

B. *Selection*—Select a trial interest rate or discount figure which in view of the investment's total profits returned and past experience appears reasonable.

C. *Calculation*—Discount the yearly income with the factors listed under the trial interest rate.

D. *Final Answers*—If the total present value of the income is about equal ($\pm 3\%$) to the proposed investment, the trial rate of return is considered correct. When the total present value of the income is lower than the proposed investment, it is necessary to select a lower trial rate as the original discount was too high. Conversely, if the total present value of the income is higher than the proposed investment, a higher trial rate must be selected as the first discount rate was too low. The trial calculations should be continued until the appropriate rate, one which will give a present value of income almost equal ($\pm 3\%$) to the proposed investment, is selected.

The next quantitative example will consider the most difficult general type of alternative investment problem—one featuring both uneven savings and an investment committed at different periods of time. The basic objective of the computation will be the same as the preceding one—namely, to equate via cash inflow and outlay an appropriate discount figure. The discount rates which equate the savings and investment figures will be the rate of return for the project. Unlike the previous examples this computation will be broken into two main parts: one which will bring back to present value the inflow (savings), while the other will bring back to present value the outlay (investment).

**(Uneven savings and uneven investment)**

**SAVINGS AND INVESTMENT DATA**

| | | |
|---|---|---|
| Proposed investment | | $7,100 |
| Economic life | 6 years | |
| Total cash generated after tax and before depreciation | | $8,700 |

1. *Savings Computations*

| *Time Period* | *Income Flow* | *Interest Rate* | *Discount Factor** | *Present Value of Yearly Inflow* |
|---|---|---|---|---|
| 1st year | $2,000 | 12% | .893 | $1,786 |
| 2nd year | 700 | | .797 | 558 |
| 3rd year | 1,000 | | .712 | 712 |
| 4th year | 500 | | .636 | 318 |
| 5th year | 1,500 | | .567 | 851 |
| 6th year | 3,000 | | .507 | 1,521 |
| Totals | $8,700 | | | $5,746 |

2. *Investment Computations*

| *Time Period* | *Expenditure Flow* | *Interest Rate* | *Discount Factor** | *Present Value of Yearly Outflow* |
|---|---|---|---|---|
| 1st year | $3,000 | 12% | .893 | $2,679 |
| 2nd year | 2,500 | | .797 | 1,993 |
| 3rd year | 1,000 | | .712 | 712 |
| 4th year | 600 | | .636 | 381 |
| Totals | $7,100 | | | $5,765 |

* From Table A.

Both inflow and outlay become approximately equal using an interest rate or discount factor of 12%; therefore, the time adjusted rate of return for this project is 12%. If this return is higher than both the company's cost of capital and earnings per share (Section IV), then this investment is, from a quantitative viewpoint, an attractive one provided it is relatively free of risk; if, on the other hand, the 12% is lower than the corporate rate of return, the investment becomes unattractive. The concept of risk indicates that a company should demand a rate of return commensurate with the project's risk. Thus, those proposals which carry a high degree of risk (exploratory drilling in the oil industry) should produce a substantially higher return than a proposal which is relatively risk free (acquisition of timberlands for an integrated paper company).

As previously indicated, the tax considerations must be taken into account in each alternative investment problem. However, the tax computation (Appendix B) should be done separately and not directly included in the inflow and outlay calculations. Finally, it should be noted that alternative investment problems similar to the one above can be handled in one large computation; this can be done by netting the investment and savings figure against each other with the present value of the net flows being zero.

Before closing this section I would like to focus our attention on one particularly significant point: that is, the *judgment* involved in making realistic appraisals of the investment's economic life and operating savings. If a haphazard job is done in this area, the rate of return will show substantial variance from the reality of the situation.

The analysis and evaluation of all facets of the marketing, manufacturing, labor and capital goods phases of the situation must be particularly sound in those industries (a) which have a high degree of obsolescence for capital goods, (b) in which labor savings are extremely difficult to realize and (c) which have depreciation as one of the most significant items in cost of sales.

## V DISADVANTAGES OF EMPLOYING THE TIME ADJUSTED RATE OF RETURN

Although the writer firmly believes in the utility of the time adjusted rate of return method as the best quantitative yardstick for evaluating alternative investment choices, its use possesses certain real drawbacks. Let us quickly look at the main disadvantages:

A. *Complexity*—A good rate of return system is considerably more complex than almost any type of payout system. However, it should be realized that once the system is installed and *accepted* very little effort and cost is needed to keep it going.

B. *Difficulty of achieving earnings, profits or operating savings*—This same difficulty applies to the present payout system and most of its roots lie in (a) labor rapidly becoming a fixed cost and (b) the reluctance of some companies to lay people off for a temporary period. However, one consideration which might tend to obviate this objection would be to allow for a portion of labor savings in the project. For example, the firm could stop hiring new people and use the personnel displaced by the new machine to fill in openings as they occur.

C. *Difficulty of predicting economic life of the investment*—As we have previously observed, an accurate estimation of economic life is crucial in employing the time adjusted rate of return. If we overestimate the economic life we arrive at a too favorable percentage return; the reverse holds true for being too cautious and underestimating the useful life of the machine.

As a corollary to predicting economic life of the investment, we should also evaluate other difficulties involved in computing the investment figure itself. In many cases it is necessary to estimate the salvage value of the investment to bring back that figure to present value and subtract it from the proposed outlay for the new investment. Still other investments—notably timberlands—should be considered as yielding income in perpetuity. Thus, there would be no salvage value as the investment could theoretically last forever. Finally, the difficulty in comparing investments with uneven lives and the intricacies and judgment involved in analyzing buy-or-rent decisions make the analyst's job even more difficult.

D. *Inflation*—The time adjusted rate of return method proposed in this article does not take into account the inflationary trends which the American economy has experienced since its inception. Thus, if ". . . the decay rate of the dollar is greater than the interest rate that money accumulates with time, there is no limit to what we can afford to pay for an article that lasts forever."* Certainly it can be argued that alternative investment proposals, particularly those involving differing economic lives, should take cognizance of the spectre of inflation. However, the difficulty of forecasting realistic inflationary trends, coupled with the exigencies of inserting this allowance for inflation in our rate of return computation, makes this observer extremely reluctant, at this time, to quantitatively consider the effect of inflation on all alternative investment proposals. On the other hand, if a sound, *understandable* method to consider inflation were developed, which could be inserted with little difficulty into the rate of return calculation, it would probably be beneficial to adopt it. Moreover, if any allowance was made for inflation, it would be one which would affect all the investment proposals under consideration with relatively equal weight. Thus, any adjustments made would be uniform in nature and the small margin of difference which would result in comparing investments with differing economic lives would, when brought back to present value, be relatively insignificant in terms of the total picture. Finally, the absence of an inflation adjustment in our computations is essentially conservative as it does not swell later years' earnings.

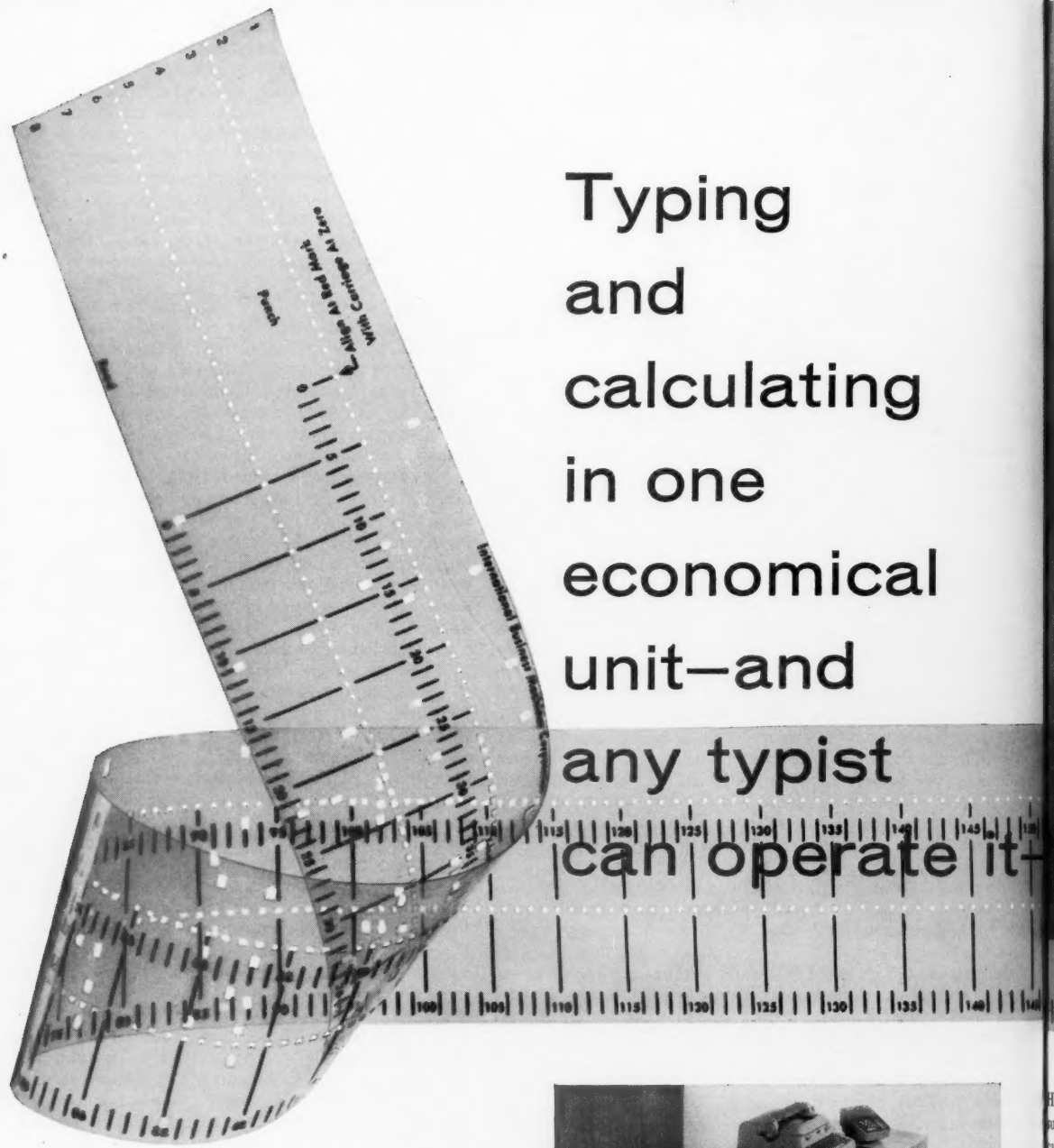
## VI OTHER CONSIDERATIONS

As previously indicated (Section II) the main discussion was pointed toward an evaluation of quantitative yardsticks. Therefore, the writer has ignored completely or only given cursory treatment to other important criteria of good capital expenditure management; some of these are listed below:

*(Continued on page 393)*

* Jelen, F. C., "Watch Your Cost Analysis," *Chemical Engineering*, June 1956.

# Typing and calculating in one economical unit—and any typist can operate it—



This pre-punched plastic tape is the key to the flexible efficiency and simplicity of the new IBM 632. Inserted in back of the typewriter, the tape automatically instructs the machine to perform the desired operation, reducing clerical error by eliminating virtually all manual instructions. For a different application, the tape can be changed in seconds. So simple is the 632 to operate that any typist can learn to use it in a few minutes.

Compact and functional in design, the IBM 632 consists of the electronic calculating unit, the electric typewriter, and the ten-key companion keyboard for insertion of numerical data.

**25 YEARS AGO IBM introduced its first electric typewriter . . . this year IBM**

# IBM 632 ELECTRONIC TYPING CALCULATOR

Here's the cost-cutting answer to office operations, such as billing, that require both typing and calculating—IBM's new 632 Electronic Typing Calculator.

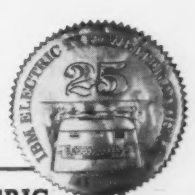
*No more* time lost as your typist halts her typing to calculate. *No more* dollar-wasting duplication of work caused by separate typing and calculating operations. *No more* clerical errors in transferring numbers from calculator to typewriter.

Here, in one compact, low-cost unit, IBM brings you an office machine that adds, subtracts, multiplies, carries totals, computes taxes, subtracts discounts, inserts decimal points, stores information in its magnetic core "memory," *and* types out results—all *automatically.*

Yet the IBM 632 Electronic Typing Calculator is so simple to operate that any typist can learn to use it in minutes!

And the IBM 632 is suitable both for small companies seeking the advantages of electronic automation and for large companies where, for certain applications, it can be a valuable supplement to more extensive data processing equipment.

Find out now just how the new IBM 632 can help *your* business cut costs and build profits. Call your local IBM representative today.




**continues its leadership with its one millionth electric typewriter.**

**IBM ELECTRIC TYPEWRITERS**

# The Advertising Budget

Frank D. Robinson

***Using the game theory to determine how much to spend for advertising***

BECAUSE of our ability to determine a definite mathematical relationship between costs and activity at various operating levels, our budgeting for the manufacturing or production function of the business is reasonably accurate and is a powerful management tool. With a properly set fixed and variable budget it is possible to provide for profit control by (1) setting forth where and how variable costs should fluctuate with volume and (2) by establishing limits on so-called "fixed" costs.

Basically, we are free to operate the manufacturing function in line with the profit plan (or budget) because we more or less know precisely the effect on profits that any of our possible courses of action will have.

The marketing cost elements of rent, telephone, commissions and sales salaries are likewise relatively easy to budget, for they, too, fall into the familiar fixed and variable elements. With these elements of marketing costs we again feel free to set forth a profit plan, knowing with reasonable accuracy the effect on profits that any of our possible courses of action will have.

The advertising element of marketing costs is completely different, because we cannot accurately measure the effects of our possible courses of action and, equally important, the benefits of any course of action we take with respect to the advertising program may be greatly influenced by the advertising activities of our competitors. In other words, a course of action we elect to take with respect to advertising may be a good one if competition takes one course of action, and a poor course if the competitor takes another.

Therefore, there is a very important distinction between budgeting for manufacturing and marketing costs other than advertising on the one hand, and advertising costs on the other. The first group of costs are under our own power to optimize for profit.

The advertising cost levels established may or may not be at optimum profit levels depending upon forces beyond our control—that is, the advertising efforts of our competitors coupled with changes in the direction of the business cycle that have taken place in the time between the authorization of the expenditure and its actual occurrence.

A properly set advertising budget, therefore, is one in which the "diluting" effects of competitors' advertising are evaluated and a course of action—i.e., strategy—is selected so that at least fair results will be achieved even if competition chooses the worst possible course of action against our cause, and where excellent results will be obtained if competition chooses the course of action least damaging to our cause. In addition, the budget should be "set" for the direction that it is anticipated the business cycle will take.

Mathematical techniques have been developed to solve problems involving the determination of the best of several alternate courses of action, the benefits of which courses will vary depending upon the action taken by competitors. These mathematical techniques are known as "game theory."

Before setting up a mathematical model of the problem, however, we must establish the advertising principles that we have considered valid in setting forth the ranking of the benefits and losses used in the mathematical model.

1. The basic justification for advertising is that with such expenditures, sales can be increased at an advertising cost that yields an additional contribution to operating profit that is beyond the profit that would have been achieved without the advertising. At some point the cost of advertising will increase to the level that the increased sales cease to be worth the additional advertising costs. Increased sales due to advertising can be either increased unit sales at constant prices or increased unit selling prices above those that could be obtained without an "advertised product."

For example, a retailer who buys a unit for $60.00, resells it for $100.00, and pays a 10% ($10.00 unit) commission cannot afford to spend more than $30.00 for advertising for each *additional* unit sold. A $3,000.00 advertising campaign, therefore, would require the sale of 100 additional units just to break even.

2. Different products vary greatly in the way that their sales can be increased by the use of advertising. Caskets are an example of a product the over-all sales of which are "inert" to promotion.

3. However, even if additional over-all demand for the product cannot be created, it is possible to increase one's own share of the fixed market. This means that the advertising of such inert products should be slanted at improving "market share"—we should not attempt to sell the product as a product, but should sell the benefits of our particular version of the product or the value of dealing with our particular firm.

4. Different products vary greatly in the length of time that the purchasers of such products react to past advertising. For example, a seller of college class rings has a different lot of customers each year. A seller of bank vaults has purchasers that tend to remain in their jobs for considerable periods of time. Therefore, the risks involved in curtailing advertising are much less with some products than they are with others. In addition, a decision to reduce advertising efforts is much safer on the part of a firm which has built up a high degree of advertising retention than one which has not.

5. While no conclusive studies have been made, it appears that during past downswings in the business cycle, firms which

**FRANK D. ROBINSON, vice president and treasurer of Diebold, Incorporated, Canton, Ohio, has been associated with that firm since April 1951. Prior to that time he spent 13 years with Westinghouse Electric Corporation in supervisory accounting capacities. He is president of the Canton Chapter of the National Society for Business Budgeting and is a member of the National Association of Accountants. In May 1956 he became a member of the Cleveland Control of Controllers Institute of America. He is a graduate of the Columbia University School of Business Administration and holds a B.S. degree.**

**TABLE I**

| | | | |
|---|---|---|---|
| 200 units sold @ $100.00 each | | $20,000 | 100.0% |
| Less: purchase costs 200 @ $60.00 each | $12,000 | | |
| Commissions @ $10.00 each | 2,000 | | |
| Advertising | 2,400 | 16,400 | 82.0% |
| | | $ 3,600 | 18.0% |

**TABLE I-a**

| | | | |
|---|---|---|---|
| 100 increased units sold @ $100.00 each | | $10,000 | 100.0% |
| Less: 100 units cost @ $60.00 each | $ 6,000 | | |
| 100 units commission @ $10.00 each | 1,000 | | |
| Advertising | 1,200 | 8,200 | 82.0% |
| | | $ 1,800 | 18.0% |

**TABLE I-b**

| | | | |
|---|---|---|---|
| 100 units sales @ $100.00 each | | $10,000 | 100.0% |
| Less: 100 units cost @ $60.00 each | $ 6,000 | | |
| 100 units commission @ $10.00 each | 1,000 | | |
| Advertising | 1,000 | 8,000 | 80.0% |
| | | $ 2,000 | 20.0% |

increased advertising maintained rates of volume higher than those of competitors who did not increase advertising, but that such advertising did not increase the profits of those who increased advertising over those who did not.

On upswings in the business cycle, firms who increased advertising increased both their volumes and profits over those who did not. We believe that it is vital to increase advertising on the upswing of the business cycle, attempt to find an optimum level of advertising during the boom, and drop off sharply on the downward side of the business cycle. We would define "sharply" as at a rate greater than the forecasted rate of drop in sales volume.

6. The effect of competitors' advertising is to dilute one's own advertising efforts. Therefore, the benefits from any program we undertake will vary in accordance with the intensity of competitors' advertising. One element of justification for the advertising budget should be a factual exhibit of competitive advertising practices and cost levels over past periods.

7. In our opinion, the advertising budget should not be set on an annual basis in companies where volume will probably vary with the business cycle; quarterly budgets would seem most reasonable.

Using the above listed principles, the following steps should be taken to set the advertising budget of a product line whose sales tend to fluctuate in the same general path as the over-all business cycle:

1. Develop, assuming operations at the top of the business cycle, the advertising cost level that will produce additional sales dollars sufficient to yield the firm's required rate of marginal contribution to income on the increased sales dollars forecast. Obviously, this can only be a guess. However, the requirement to determine "plus" volume, "plus" operating profit after the increased advertising expense, and to set an objective is, in our opinion, most beneficial to the company despite the inaccuracies that are present.

For example, we previously discussed the retailer who resold a unit with a $60.00 cost for $100.00 and paid a 10% or $10.00 commission. If he assumed he could move 200 "plus" units as a result of an advertising campaign, and had an objective of an 18% marginal contribution to income, then he could spend only $2400.00 for advertising *(Table I)*.

A summation of the budgets for each of the individual product lines would be the over-all company advertising budget in good times expected to continue long enough to recoup the advertising outlay.

A corollary benefit of this approach is that it tends to get dollars spent promoting items with high marginal income contribution rates and/or those items whose sales are expected to be most greatly increased by advertising.

2. Determine the probable immediate direction of the business cycle—horizontal, up or down.

3. Estimate the probable level of competitors' advertising activity:

a. If he will decrease advertising, we are safe to spend at a lesser rate.

b. If he will increase his activity, we may require more funds to attain any given objective.

c. Either earmark some of the budget for a programmed direct counterattack or, in any event, hold some of the budget uncommitted for possible counterattack. Experience is the only guide as to how much of the budget to reserve for this safety factor.

4. Having established the optimum level of the advertising budget assuming favorable business conditions, held back a reasonable portion for counterattack, and adjusted the total for probable increased or decreased competitive activity, the next step is to decide whether to increase, decrease, or hold the budget constant in view of the direction of the business cycle. Our decision to increase, decrease, or hold constant must also recognize that our competitor has the same three alternatives as ourselves. As we said earlier, the aim is to select a course of action so that at least fair results will be obtained if the competition selects the course of action least favorable to us, and which will give us excellent results if the competition selects a course most favorable to us.

5. In calculating our best course of action, we obviously cannot set actual dollar and cents values or other quantitative values in measuring the benefits of one course of action versus those of another. This does not mean that game theory cannot be applied to the solution of the problem if we will accept a ranking of the order of benefits. Using this ranking—the process is called "ordering"—we rank benefits in the order of from "excellent" to "very poor." In other words, while we cannot make quantitative estimates of the net results of each of our alternative courses of action as they will be affected by competitors' activities, we are usually able to set qualitative values in the same way as we know boiling water is warmer than water at room temperature, which is, in turn warmer than ice water.

*(Continued on page 388)*

# A Theory of Depreciation Consistent with Decision-Making

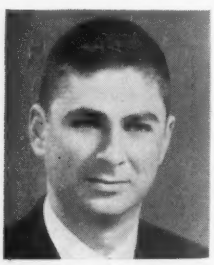
Harold Bierman, Jr.

***Describes a means of allocating the depreciation charge so that the return on investment is undistorted***

"In sum, timetable depreciation sets up a will-o'-the-wisp by assuming that there is some knowable or determinable timetable that is 'fair' and represents the way in which assets 'really' depreciate, even though nobody can write an acceptable definition of depreciation."[1]

THOSE of an economic bent of mind often belittle the accountant's efforts to allocate the cost of a long-lived asset to expense over its useful life. Criticisms of accounting practice are indeed valid,[2] but to imply that there is not a "fair" or "determinable" timetable of depreciation is rash. It is the argument of this paper that there is a determinable timetable of depreciation in most cases, and in fact the timetable is determined at the time of purchase. The depreciation computations to be developed here are not just idle doodling, but rather they are important data for the purposes of measuring income and appraising the results of managerial action.

The establishment of the suggested procedure for computing depreciation has one requirement. When an investment is made in a long-lived asset a prediction must be made of the amount and timing of the future net cash proceeds. It does not have to be an absolutely correct forecast of the future. It does have to be a reasonable estimate, preferably the estimate which was the basis of the decision to invest. Surely this requirement is not unreasonable. The prediction of net cash proceeds has been built into the widely accepted capital budgeting procedure recommended by the author of the quotation which opens this paper.[3] It is merely necessary to use the prediction of cash proceeds for the depreciation schedule as well as the capital budget request.



**HAROLD BIERMAN, JR. is associate professor of Accounting at the Graduate School of Business and Public Administration, Cornell University, Ithaca, N. Y. His prior teaching positions include: Assistant professor, School of Business, University of Chicago; instructor, School of Business Administration, University of Michigan and College of Commerce, Louisiana State University. His industrial experience has been with Boeing Airplane Company, Shell Oil Company, National Can Corporation, and the Ford Motor Company. He holds an M.B.A. and a Ph.D. degree both from the University of Michigan.**

## A DEFINITION OF DEPRECIATION ACCOUNTING

The accepted function of depreciation accounting, from a financial accounting point of view, is to allocate the cost of an asset over its useful life. The purpose of this concept is to charge the revenues of a period with the expenses of earning those revenues. The questions raised by Dean are:

*How can we determine the amount of the cost of the investment which should be allocated to any one period?*

*Are we doomed to an arbitrary timetable of charges?*

The basis of the depreciation schedule developed here will be that a company does not buy bricks, mortar, or steel when a long-lived asset is purchased, but rather it is purchasing the future cash proceeds to be earned over the asset's life. This is based on the fact that industrial assets derive value from their ability to earn net cash proceeds (revenues less expenses requiring cash expenditures).

The purchase price of the investment must be split into the amounts paid for the net cash proceeds of each period.

*How much was paid for the cash proceeds of a period?*

We shall assume that an amount equal to the present value of the cash proceeds of the period is the cost of the cash proceeds.

If the depreciation computation stopped with the present value of the cash proceeds, this would be a step in the right direction, but it would be incomplete, thus incorrect. The complete accounting procedure should include capital costs (implicit interest on the investment). This idea will be developed in detail after the problem to be solved is defined.

## THE PROBLEM TO BE SOLVED

The optimum depreciation procedure should give a reasonable measure of a period's income and leave the return on investment (income divided by investment) undistorted. Let us assume a situation where an investment which cost $272.34 earns net cash proceeeds of $100 in year one and $200 in year two. The investment will have no value at the end of year two (the salvage is zero). For ease in computation, the proceeds are assumed to be earned at the end of each year. The life of the investment is assumed to be a function of time, not activity.

---

[1] Joel Dean, "Four Ways to Write Off Capital Investments: Management Should Have a Wider Tax Choice," *Journal of Business,* XXIX (April 1956), p. 87.

[2] See Harold Bierman, Jr. and David Green, "Accounting for Income —The Problems Arising from Certificates of Necessity," *The Federal Accountant,* VI (June 1957), pp. 29-44. The article discusses one major difficulty in depreciation accounting.

[3] See Joel Dean, *Capital Budgeting* (New York: University Press, 1951). There are also numerous articles by Dean which stress the importance of taking into consideration the timing as well as the amount of the future cash proceeds.

The first step is to compute the expected rate of return or yield of the investment. By the use of a trial-and-error solution the rate of return is found to be 6%. This amount will be used to determine the present value of the cash proceeds.

Assume that the actual cash proceeds are equal to the predicted cash proceeds:

*What is the income of year one?*
*What is the income of year two?*
*What is the return on investment for each year?*

Let us first try the straight-line method of depreciation. The income statements for the two years are as follows:

| | *Year 1* | *Year 2* |
|---|---|---|
| Net Cash Proceeds | $100.00 | $200.00 |
| Less: Depreciation | 136.17 | 136.17 |
| Net Income (Deficit) | ($ 36.17) | $ 63.83 |

*Was there a deficit in the first year of $36.17?*
*A profit of $63.83 in year two?*
*Is a deficit of $36.17 consistent with the predicted (and actual) rate of return of 6%?*

There are obvious pitfalls in assuming that the depreciation is equal for each of the two periods. The straight-line method of depreciation is not a reasonable procedure for this situation. The distortion in the measures of performance is made even worse by the introduction of any of the decreasing charge procedures (such as twice straight-line or sum-of-the-years' digits). These methods will give an even more distorted picture since the proceeds of the first year will be charged with more depreciation, making the deficit of the first year even larger.

## SOLUTION TO THE PROBLEM

In a prior section of this paper it was suggested that a company, on making an investment in a long-lived asset, is actually purchasing future cash proceeds rather than the physical components of the asset. The present value of the cash proceeds in the example being studied is given in *Table 1* (the rate of return is used as the rate of discount).

**TABLE 1**

| *Year* | *Net Cash Proceeds* | *Present Value of $1 (using the rate of return 6%)* | *Present Value of Net Cash Proceeds (the basic depreciation)* |
|---|---|---|---|
| 1 | $100 | .9434 | $ 94.34 |
| 2 | 200 | .8900 | 178.00 |
| | $300 | | $272.34 |

The present value of the cash proceeds is the *basic* depreciation charge for each year since this is the amount that the firm is paying for those cash proceeds. But the total cost of earning the revenues must include the implicit interest cost of carrying the investment for one period. The total investment is $272.34. Using the 6% rate of return the total implicit interest cost of using the $272.34 investment is $16.34. This is the implicit interest cost of using the asset and also the implicit revenue earned by the company.

*How much of the $16.34 is an interest expense of the first period?*

The investment of $94.34 was made in order to earn the cash proceeds of $100 of the first year. Using the 6% interest rate, the interest cost applicable to the first year is $5.66 (6% of $94.34). The difference between $16.34 and $5.66 is the interest cost applicable to the investment of $178.00 (the purchase price of the cash proceeds of the second year). This $10.68 should properly be charged against the revenues of the second year, not the first year, since it is a cost of the second year's revenues.

*Table 2* shows the basic depreciation charge, the implicit interest cost, the implicit interest revenue of the two periods, and the sum of the three items.

**TABLE 2**

| *Year* | *1 Basic Depreciation* | *2 Implicit Interest Cost* | *3 Implicit Interest Revenue* | *4 (1 plus 2 minus 3) Total of Depreciation Plus Interest* |
|---|---|---|---|---|
| 1 | $ 94.34 | $ 5.66 | $16.34 | $ 83.66 |
| 2 | 178.00 | 22.00 | 11.32 | 188.68 |
| | $272.34 | | | $272.34 |

Explanation of Computations:

Implicit Interest Cost:

*Year 1*—$94.34 x $(1.06)^1 - 94.34 = \$5.66$

*Year 2*—$178.00 x $(1.06)^2 - 178.00 = \$22.00$

Implicit Interest Revenue:

*Year 1*—$272.34 x 6% = $16.34 Interest Revenue—Year One

*Year 2*—$272.34 + (16.34 — 5.66) — 94.34 = $188.68 Investment Beginning of Second Year

$188.68 x 6% = $11.32 Interest Revenue—Year Two

The 16.34 minus 5.66 is the amount of interest cost incurred in the first year which is applicable to the second year.

The $94.34 is the amount the investment depreciated the first year.

We are now ready to prepare the income statements for the two years.

**INCOME STATEMENTS**

| | *Year 1* | *Year 2* |
|---|---|---|
| Net Cash Proceeds | $100.00 | $200.00 |
| less: Basic Depreciation | 94.34 | 178.00 |
| | $ 5.66 | $ 22.00 |
| less: Implicit Interest Cost | 5.66 | 22.00 |
| *Net Operating Income* | 0 | 0 |
| plus: Interest Revenue | 16.34 | 11.32 |
| *Net Income* | $ 16.34 | $ 11.32 |

The return on investment of the two years is as follows:

*Year 1*

$$\frac{\text{Income}}{\text{Investment Beg. of Year}} = \frac{16.34}{272.34} = 6\%$$

*Year 2*

$$\frac{\text{Income}}{\text{Investment Beg. of Year}} = \frac{11.32}{188.74} = 6\%$$

The investment as of the beginning of the year was chosen instead of the average investment in order to simplify the computations (the beginning of the period investment was also assumed in the rate of return computations).

It should be noted that the returns on investment for the two years are both equal to the rate of return predicted at the time of purchase. This shows that the depreciation procedure illustrated here does not distort the return on investment. The *operating incomes* for the two years are also equal, eliminating the unlikely situation of having a deficit in the first year (as was true with straight-line depreciation).

The *net incomes* for the two years are unequal. This results from the fact that there was a larger investment in year one, which was successfully operated (meeting the predicted cash proceeds). The investment of year two also was successfully operated, but the total investment was smaller, thus the implicit interest revenue was less.

The procedure has succeeded in allocating the cost of using the long-lived asset (the depreciation charge) so that the return on investment is undistorted. Also, the income reported is

*(Continued on page 393)*

# Effective Business Budgeting

BUDGETING, as a means of profit planning, appears to be recognized as one of the better techniques available to management in achieving integrated and effective planning and control. A report of a pioneer study on this subject just issued by Controllership Foundation, research arm of Controllers Institute of America, indicates that 89% of a carefully selected group of American and Canadian companies surveyed have a *formal* budget or profit-planning program.

The 424 leading companies comprising the area of study do not represent a random sample, but rather a selective sample.* Considerable effort has been expended to develop a sample representative of firms reputedly doing a *better-than-average* job of planning, budgeting, and controlling operations.

Personal interviews (35) and responses to a mail questionnaire (389) provided the data recorded and analyzed in this extensive report entitled *Business Budgeting: A Survey of Management Planning and Control Practices.* There are 363 easy-to-read pages of text (containing 93 tables, 12 figures and four appendices) which summarize the results and appraise the budgeting practices. These actual budget practices of the companies reporting reveal much of interest concerning the length of the budget period, the common patterns of participation in planning, and the types of long-range plans. Highlights are:

1. Of the 375 companies indicating the length of the budget period, 86 per cent (323) reported that the budget covered a one-year period; 10 per cent (36 companies) indicated that the budget covered a six-month period; and 4 per cent (16 companies) reported that the budget covered a three-month period.

2. To aid in both planning and control, most of the companies studied subdivide the budget period into a series of interim time periods. Seventy-nine per cent (295 companies) of the 375 companies reporting on the subdivision of the budget period divide the budget into monthly periods; 17 per cent (63 companies) divide the budget into quarterly periods; 2 per cent (9 companies) use annual periods only; 1 per cent (4 companies) subdivide the budget period into weekly periods; and 1 per cent (4 companies) subdivide the budget into 4-week periods.

3. The profit-and-loss budget is the primary technique used for bringing together and summarizing the planned revenues, costs, and the residual income. The personal interviews revealed many instances where a profit-and-loss budget resulted in intensified cost reduction programs, selling campaigns, or altered pricing policies. The study disclosed that 96 per cent (366) of the 379 companies using a formal budget program prepare a budget profit-and-loss statement. Fifty-three per cent (200 companies) of the 379 with formal budgeting programs prepare a budgeted balance sheet. Approximately one half of the companies utilizing a formal budget program have developed budget manuals.

4. The per cent of companies developing formalized plans for periods of more than one year is not extremely high; however, the personal interviews reflect an increasing awareness on the part of business executives of the need to supplement short-range plans with long-range plans. Of the 424 companies studied, 63 per cent develop long-range *sales* plans; 63 per cent develop long-range *capital expenditure* plans; 54 per cent develop long-range *profit* plans; 50 per cent develop long-range *cash flow* plans; 38 per cent develop long-range *expense* plans; and 34 per cent develop long-range *research* plans.

"I plan to travel with the money I get for this expedition. Aside from this trip, I've never been west of Hoboken, New Jersey"

The more important characteristics of successful budgeting which clearly stand out in the composite picture are:

1. A firm foundation for budgeting based on:

a. sound organizational structure which designates clearly areas of responsibility and authority, and

b. an adequate accounting system oriented to organizational responsibilities.

2. A formalization and integration of:

a. the planning process, and

b. the control process, including the related procedures and techniques employed.

* For this reason, the results should not be considered as representative of the budgetary practices of the *average* business enterprise in Canada and the United States.

3. A formalization and integration of the budgetary system into a coordinated program consistent with organizational responsibilities and planning and control needs.

4. A definite and clear-cut assignment of responsibility for:

a. budget estimates related to operational assignments, and
b. over-all staff coordination of the budget program.

5. A budgetary system that provides for:

a. definite time schedules for the completion of formal plans consistent with specific planning responsibilities,
b. timely reporting of results related to objectives, and
c. prompt control action related to organizational responsibilities.

6. Operating plans for the firm and for each major organizational division thereof formalized and expressed in detail.

7. A reporting system which compares actual results with standards or objectives by areas of organizational responsibility (applying the exception principle).

8. Simple procedures, applied to the fullest extent possible, consistent with the requirements of the situation.

9. A system whereby all levels of management actively participate in the planning and control processes.

10. A recognition of the significant differences existing between the planning process and the control process, and an appreciation of the interrelationships between the two processes.

11. A program of continuous budget education to insure an appreciation of the potentials involved, and an increasingly enlightened approach in the application of budgeting.

12. Active support and participation in the budgetary program from top management to the lowest level of the supervision.

13. A periodic follow-up to appraise the implementation of budgetary policies and control procedures by the lower levels of management.

14. A clear understanding and appreciation by both line personnel and staff personnel of line and staff relationships.

15. Provision for enlightened budgetary staff assistance to lower-level supervisors when needed.

16. A continuous participation by both line and staff in the solution of day-to-day planning and control problems.

17. An adequate recognition of and emphasis on the importance of enlightened human relations in generating a spirit of willing cooperation among persons associated in an enterprise.

18. A system of budgeting designed and applied primarily to motivate people rather than to exert pressure on individuals.

19. An appreciation of the differences between "job responsibilities" and control techniques.

20. A recognition of the fact that control is accomplished through people rather than through techniques.

This study brought to light three principal problems or limitations relative to the budgetary process, *viz.*,

1. A tendency on the part of some executives to expect results *from the technique,* failing to appreciate the fact that budgeting is a tool to be used by management and is effective only through the actions of responsible individuals. These executives apparently do not realize that the budget does not manage, but is an effective tool available to management. The results obtained are dependent upon how the tool is used. It does not and cannot, of course, substitute for the use of judgment and good leadership by management.

2. Failure on the part of some executives to recognize that effective use and application of budgeting depends almost wholly upon an understanding and appreciation of the importance of sound human relations. In other words, good use of budgets and budget techniques can be realized only through the coordinated efforts of many people at various management levels. It helps to have these people understand what budgeting is and know that they honestly play an active role in making the budget system work.

3. The inherent difficulties involved in forecasting volume with reasonable accuracy and confidence.

In recognition of the fact that the principles of management are essentially similar in all businesses, the concrete information on the pattern of management's practices presented in this report should serve as a guide of inestimable value to any business executive seeking a solution to the budgeting problems of his company irrespective of the size or classification of the industry in which he is engaged. The results of the study also should be of particular interest and use to educational institutions concerned with the training of future business leaders.

Copies of *Business Budgeting,* available in mid-August, may be ordered from Controllership Foundation, Inc., Two Park Avenue, New York 16, N. Y., at $12.50 per copy ($10.00 to members of Controllers Institute).


## Dates Ahead

MARK YOUR CALENDAR

CONTROLLERS INSTITUTE OF AMERICA

*27th*

ANNUAL NATIONAL CONFERENCE

**OCTOBER 19-22** — **CHALFONTE-HADDON HALL** — **ATLANTIC CITY**

OTHER ORGANIZATIONS

| | | |
|---|---|---|
| AUGUST 24-28 | TAX EXECUTIVES INSTITUTE | WHITE SULPHUR SPRINGS, W. VA. |
| AUGUST 25-27 | AMERICAN ACCOUNTING ASSOCIATION | SYRACUSE |
| OCTOBER 11-16 | AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS | DETROIT |
| NOVEMBER 3-5 | NATIONAL ASSOCIATION OF BANK AUDITORS AND COMPTROLLERS 34th Annual Convention | DALLAS |
| NOVEMBER 17-19 | NATIONAL FOREIGN TRADE COUNCIL 45th National Convention | NEW YORK |

*Royal McBee is cutting automation down to size*

# NEW KEYSORT TABULATING PUNCH

**Gives you automatic punched-card processing with one low-cost machine!**

The Keysort Tabulating Punch today cuts automation down to size by providing, in just one compact unit, everything required for complete punched-card processing. With greatest adaptability to a company's size and set-up. And at a rental of less than $100 a month.

Keysort Tabulating Punch code-punches and tabulates quantities and amounts in Keysort cards . . . then reads, duplicates and summarizes these figures . . . simultaneously printing them for visual verification. The most versatile machine of its kind available. Easy to master, easy to use. In almost every area of plant control – job costing; labor distribution; inventory; labor, material and production control; sales and order analysis. In service organizations and hospitals – in every type of operation requiring fast, accurate data processing.

Call your nearby Royal McBee man to arrange a demonstration, or write us for illustrated descriptive folder.

**OUTSTANDING FEATURES** ★ Simple operation from 10-key keyboard ★ Punches 2 quantities in one operation (dollars-hours, dollars-units etc.) ★ Simultaneously tabulates all amounts ★ Reads sorted cards, automatically accumulates and totals punched amounts ★ Prints all figures for immediate verification ★ Adaptable to any size work-load . . . to centralized and decentralized operations.

**McBEE KEYSORT®**

PUNCHED-CARD CONTROLS FOR ANY BUSINESS

**ROYAL McBEE Corp.** PORT CHESTER, N.Y., Offices in principal cities. In Canada: The McBee Company, Ltd., Toronto 18



Y.UM

# CORPORATE EXPENDITURES, PROFIT PLANNING, MERGERS, AND SCIENTIFIC MANAGEMENT

## *Discussed at Regional Conferences of Controllers Institute*

TWO OUTSTANDING regional conferences of Controllers Institute of America—the Midwestern held at French Lick Springs, Indiana, and the Western held in Seattle, Washington—were noteworthy for the high quality of the technical subjects and the hospitality of the sponsoring Controls.

The Midwestern Conference, April 27-29, sponsored by the Indianapolis Control, was under the chairmanship of Edward M. Karrman, treasurer and controller, American Life Insurance Company, Indianapolis. Serving as program chairman was Charles R. Israel, treasurer, Aero-Mayflower Transit Company, Indianapolis, while Victor C. Seiter, assistant secretary-treasurer and controller, Citizens Gas & Coke Utility, acted as vice chairman of the Committee as well as of the Conference as a whole.

Speaking at the opening technical session, Reid McCrum, treasurer, Anheuser-Busch, Inc., St. Louis, Mo., discussed "Some Observations on Capital Expenditures." Following Mr. McCrum, three executives of Radio Corporation of America—F. R. Demmerly, E. W. Patton, and J. H. Walker—told the group how RCA conducts its program of "Planning for Profit."

On the second morning of technical sessions, Dr. Harry Sauvain, professor of Finance, University of Indiana, spoke on "The Economy—Up or Down?" and Thomas R. Bossort, Jr., director, Executive Development Committee Program, Indiana University, discussed "Executive Competence in Business."

The banquet speaker was Dr. Carl S. Winters of the Oak Park Baptist Church, Oak Park, Ill., whose subject was "The Fine Art of Living." The closing luncheon speaker was Robert J. Kryter, a consulting engineer from Indianapolis, whose subject was "Sputniks, Atoms, and You."

On the lighter side, the Conference opened with an informal session which was followed by a buffet at which Institute members and their wives and guests were entertained by the Singing Hoosiers and Hoosier Queens of Indiana University. A dance was held after the banquet and ample time was available for golf and other types of recreation. The ladies' program included a special luncheon with a talk on flower arrangement and a trip to West Baden Springs.

A feature of the Midwestern Conference was the Annual Meeting of Members held Monday morning, April 28, at which new national directors of Controllers Institute were elected.

Presiding officers at the various sessions included Charles R. Israel, treasurer, Aero-Mayflower Transit Company, Indianapolis; Russell E. Westfall, secretary-treasurer, Eli Lilly International Corporation; Professor Lyle D. Dieterle, University of Indiana; and Frederic M. Hadley, executive vice president, Eli Lilly & Company. James L. Peirce, vice president and controller, A. B. Dick Company, and president, Controllers Institute, presided at the banquet while D. E. Browne, vice president-finance and controller, Lockheed Aircraft Corporation, and chairman of the Board of the Institute, presided at the closing luncheon.

The Western Conference, June 5-7, sponsored by the Seattle Control, was under the chairmanship of Harold W. Haynes, assistant controller, Boeing Airplane Company, Seattle. Clyde Skeen, controller, Boeing Airplane Company, was the program chairman.

The opening speaker at the technical session was Irving S. Smith, president, Continental, Inc., and also president of the Seattle Chamber of Commerce. Mr. Smith was followed by H. De Wayne Kraeger, director, State of Washington Department of Commerce and Economic Development, whose subject was "The Economy—Current Analysis." O. Gordon Delk, deputy commissioner of Internal Revenue, Washington, D. C., spoke on "Policies and Trends in the Administration of Tax Laws" at the opening luncheon. The afternoon technical session on June 6 featured Charles Osborne, partner,

**Work of the national Planning Committee of Controllers Institute of America is discussed at a meeting of national and local officials held in connection with the 1958 Western Regional Conference in Seattle, Washington. Standing (center) is chairman of the Planning Committee, J. McCall Hughes, vice president and controller of Mutual of New York, N. Y. Mr. Hughes is president-elect of Controllers Institute for 1958-1959 and will assume office on September 1, 1958. Presiding at this particular meeting is James L. Peirce (left), vice president and controller, A. B. Dick Company, Chicago, Illinois, and 1957-1958 president of Controllers Institute. Seated to the right of Mr. Peirce are Duncan McFadden, controller, Stanford University and E. W. Haggerty, controller-auditor, Pendleton Woolen Mills, Portland, Oregon.**

LEFT

**WILLIAM M. ALLEN, president of Boeing Airplane Company, Seattle, Wash., who spoke at the closing luncheon of the Western Conference.**

RIGHT

**O. GORDON DELK, Deputy Commissioner of Internal Revenue, Washington, D. C., addressing the Friday luncheon at the Western Conference.**

Bogle, Bogle, and Gates, Seattle, whose subject was "The Practical Aspects of Corporate Mergers," and Charles Whitehead, partner, Haskins and Sells, San Francisco, who discussed the changes in the internal revenue code recommended by an advisory group to the House Ways and Means Committee in regard to corporate distributions, liquidations, and reorganizations.

On the closing day of the Conference, the over-all subject was "Management and Research Services." The first speaker, Roger R. Crane, manager, Research Management Services, Touche, Niven, Bailey and Smart, Detroit, spoke on "The Practical Application of Scientific Theories of Management," while William C. Eldridge, partner, Booz, Allen and Hamilton, Los Angeles, discussed "Management of Research and Development—A Key to Enhance Research Effectiveness." The final technical speaker was William S. Royce, manager, Pacific Northwest Office of the Stanford Research Institute, Portland, Ore., whose subject was "The Role of Research in Assisting Long-Range Planning."

The closing luncheon speaker was William M. Allen, president, Boeing Airplane Company, Seattle, whose subject was "Are We Doing Our Best?"

Presiding officers at the technical sessions included: George J. Hodson, treasurer and comptroller, Crown-Zellerbach Canada Limited, Vancouver; E. W. Haggerty, controller, Pendleton Woolen Mills, Portland; and Duncan I. McFadden, controller, Stanford University, Palo Alto, California. The Institute president, James L. Peirce, presided at the closing luncheon which featured Mr. Allen.

A highlight of the Conference was a boat trip across Puget Sound to Kiana Lodge where the members, wives and guests enjoyed an outdoor salmon barbecue. The ladies' program included a luncheon at the Seattle Tennis Club as well as participation in the closing luncheon.

## Plans for Controllers Annual National Conference Announced

THE FULL PROGRAM of technical subjects has been developed for the 1958 Annual National Conference of Controllers Institute. Sponsored by the Philadelphia Control, the meeting will be held at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., October 19-22.

The opening day of the Conference will feature registration for members and guests and a reception is planned for the late afternoon. The members' business meeting will begin the program of events the next day, October 20, and this will be followed by a technical session with speakers from the Opinion Research Corporation.

A series of concurrent topical conferences will be held on the afternoon of October 20 and the subjects include a panel on economic depreciation headed by Carman Blough, director of Research, AICPA; a panel on direct costing headed by Wayne Keller, comptroller, Armstrong Cork Company; and a discussion of the legal aspects of records retention which will be developed by Controllership Foundation, Inc., research arm of Controllers Institute.

The Tuesday morning technical session will feature a case history presentation of management planning and control at E. I. du Pont de Nemours & Company. On Tuesday afternoon there will be 17 concurrent industry round tables for members of the various industries to discuss common problems in controllership.

On the final morning of the Conference the technical session will feature a panel discussion on corporate finance and the money market with Walter Hoadley, treasurer, Armstrong Cork Company, leading the discussion; other speakers will be from an investment bank and a commercial bank.

The luncheon speaker on Monday, October 20, will be Clifford F. Hood, president, United States Steel Corporation, while the Tuesday luncheon speaker will be Dr. D. H. Dawson, vice president, E. I. du Pont de Nemours & Company. The closing luncheon, to which wives will be invited, will feature the well-known entertainer, Ronald Reagan. The annual banquet will be held on Tuesday evening, October 21, and will be followed by entertainment and dancing.

Donald P. Jones, comptroller, Sun Oil Company, is serving as general chairman of the Conference and his vice chairmen are Raymond F. Bradshaw, financial vice president and secretary, South Chester Tube Company, and W. Randle Mitchell, vice president and controller, The American Pulley Company. Assisting Mr. Jones will be the following committee chairmen: *Arrangements,* Joseph F. DiFulgo, comptroller, Luria Brothers & Co. Inc.; *Business Show,* Stuart T. Henshall, executive vice president, Merck Sharp & Dohme Division, Merck & Co., Inc.; *Finance,* Philip J. Geib, treasurer, National Refractories Division, Mexico Refractories Company; *Housing,* Charles H. Doyle, controller and assistant treasurer, Sun Shipbuilding & Dry Dock Company; *Industry Round Tables,* Clarence W. Snyder, controller and assistant secretary, John A. Roebling's Sons Corporation; *Inter-Control Attendance,* Frank E. Michel, assistant treasurer, United Parcel Service; *Ladies' Hospitality,* George H. Daft, vice president and comptroller, Houdry Process Corporation; *Program,* William B. Carr, vice president, Provident Tradesmen Bank & Trust Company; *Publicity,* Charles A. Andrews, controller-assistant treasurer, Triangle Publications, Inc.; *Reception,* Holden V. Arnaiz, controller, Hutchinson, Rivinus & Company; *Registration,* James V. Lester, vice president, Standard Pressed Steel Company.

Attendance at the Conference is open to nonmembers as well as members of Controllers Institute and registration forms may be obtained by writing the Registration Chairman, James V. Lester, vice president, Standard Pressed Steel Company, Jenkintown, Pa.

*The tested guide to effective cost control . . .*

# Cost Accountants' Handbook

**Reliable advice** on any cost problem arising from any type of cost setup. Authoritative Handbook supplements clear, concise explanations with filled-in working forms plus instructions; practical formulas; time-saving graphs, tables, and charts.

**Illustrates, explains** specific methods found most effective by top cost accountants for controlling costs. Book points out overlooked opportunities for getting better cost information at substantial savings. Tested procedures, applications, methods of analysis and control give a reliable check on any company's methods, any proposed plan. Handbook relates cost accountants' work to functions of general accountants, management; production, engineering, legal, personnel factors.

**Information-packed** sections on: Reports, Analysis, Control. Variation Analysis. Cost Classifications. Cost Department. Organizing Cost Records. Setting and Operation of Standard Costs. Specific Order and Continuous Process Cost Systems. Joint, By-Product, Estimated Costs. Material Purchases, Costs, Inventories. Scrap, Waste, Spoilage. Timekeeping, Payrolls. Labor Costs. Overhead Accumulation, Distribution. Overhead and Product Cost, Normal Capacity. Research, Development Costs. Plant Assets, Depreciation. Budgets. Trade Associations and Uniform Systems. Statistical and Mathematical Methods.

THEODORE LANG, *Editor. 556 ills., tables; 1,482 pp.* $12

Other famous RONALD Handbooks

**ACCOUNTANTS' HANDBOOK, Rufus Wixon,** *Editor;* **Walter G. Kell,** *Staff Editor.* 4th Edition. 407 ills., tables; 1,616 pp. 6 x 9. $15

**PRODUCTION HANDBOOK, Gordon B. Carson,** *Editor.* 2nd Edition. 726 ills., tables; 1,726 pp. 6 x 9. $16

**MATERIALS HANDLING HANDBOOK, Harold A. Bolz,** *Editor;* **George E. Hagemann,** *Associate Editor.* 991 ills., tables; 1,740 pp. 6 x 9. $20

USE COUPON TO ORDER

Please send books checked below:

☐ **Cost Accountants' Handbook,** *Lang* .. $12
☐ **Accountants' Handbook,** *Wixon-Kell* . 15
☐ **Production Handbook,** *Carson* ..... 16
☐ **Materials Handling Handbook,** *Bolz-Hagemann* ..... 20

☐ **Bill me** ☐ **Bill Firm** ☐ **Check enclosed**

*Sent postage paid if check accompanies order.*

**Name** .....
CO-3
**Firm** .....
**Address** .....
**City** .....**Zone** ....**State** .....

**THE RONALD PRESS COMPANY**
**15 East 26th Street, New York 10, N. Y.**

# Inventory Management

NEARLY 30% of the working capital of the average U. S. business is tied up in inventories, but the management of these inventories is still an unsolved problem for many companies. The National Industrial Conference Board conducted a several-year study of the problem and, from the replies of more than 100 firms cooperating in the study, found that:

1. Despite apparent progress, management in general is dissatisfied with its control over inventories.
2. There is a lack of guiding principles upon which executives can base their day-to-day inventory decisions.
3. Only a relatively few companies view inventories in a positive light and seek increased profits from inventory management rather than the mere avoidance of losses.

There are three major factors which cause inventories to be a problem. First, they represent a heavy investment burden as the value of trade and industry inventories in 1957 amounted to over $90 billion. Second, companies report that changes in total inventories and in production tend to lag behind changes in sales activity. Finally, failure to provide an inventory control program that looks beyond current sales demands can result in a whole year's profits being wiped out in a single adjustment period.

According to cooperating companies, inventory imbalances stem from many causes. Among those most frequently mentioned are: Lack of a controlling policy or program which sometimes results in an "every man for himself" approach; failure to delegate management responsibility with the result that clerks who keep the stock records often make the decisions for management; failure to recognize that inventory is a company-wide problem requiring coordination between sales, finances and production; inability to forecast accurately the amount and timing of future demand for various products in the line; an inclination to hoard inventory among purchasing, production and sales personnel, all of whom can make their job easier and apparently more efficient by retaining a large inventory; the need to accumulate inventories in advance of the selling season; and failure to develop good sources of supply, which forces many companies to build larger-than-desired inventories as insurance against the interruption of production and possible loss of sales.

While the managements of most companies favor good inventory control, the study indicates that they have not always provided the degree of management influence that appears necessary for success. Their desires are seldom supported by a written statement of policy or the expression of long-range fundamental beliefs which could serve as a guide to inventory management. In fact, some executives feel that a rigid inventory policy is either impossible to attain or not needed. They prefer the flexibility that allows them to apply their business judgment to situations as they arise.

However, the exercise of this judgment usually revolves around certain long- or short-term inventory objectives. Most common among these are good service to customers, a level and profitable rate of production, steady employment, low financial investment, good vendor relations and avoidance of obsolescence and scrap.

Companies that formerly gave little thought to inventory administration are showing a new interest because tight money has forced conservation of working capital; recurring extreme inventory imbalances from time to time have embarrassed management; there have been too many discrepancies between stated values of interim and year-end inventories; and because good service to customers has not been maintained. Cooperators hope to overcome these problems by establishing a clearer statement of inventory objectives, seeking a faster rate of turnover, and providing a greater degree of direction on the part of top management.

Opinion is divided concerning the administrative level at which the management of inventories should take place. In smaller companies, it is common practice to delegate the responsibility of inventory administration to the treasurer or controller. Larger companies place inventory responsibility on either individuals, committees, or special departments. Companies with divisional operations usually center responsibility for inventory on the division manager even though the over-all program may be directed by a central organization.

The Conference Board finds that while some managements are content to judge their inventory situation by merely following the total dollar value of their inventories, others are seeking to establish standards of performance which can be used to measure adherence to their inventory objectives.

## Certificates of Necessity

ODM has issued ten certificates of necessity for accelerated amortization of research and development facilities; nine of the certificates are in the missiles field and the other is for military aircraft components. The certificates are the first to be issued since August 1947 when the 1954 IRC was amended.

**NO MATTER HOW YOU LOOK AT IT . . .**

*Pandick Press does the kind of printing you want to represent your company.*

Pandick Press, Inc.
*Established 1923*

22 THAMES ST., NEW YORK
71 CLINTON ST., NEWARK, N. J.

**LEADERS IN FINANCIAL PRINTING SINCE 1923**

# Paging the New Books

## BIG BUSINESS AND HUMAN VALUES*
### By Theodore V. Houser

**Reviewed by JOHN ADAMS**

This book deals with big business and its relationship to people. Writing from his experience as chairman of the board of Sears Roebuck and Company, Mr. Houser stresses the importance of business' obligation to people, whether in the role of employes, stockholders, consumers, or persons affected by a company simply because of proximity.

Mr. Houser expresses particular concern for employes and their opportunities for advancement. In an economy where a person's ability is not always sufficient to assure justified promotion, it is important for companies to consider each employe carefully and to give him adequate opportunity to display his value. This policy of seeking out the most able obviously will benefit the company as well as the individual.

Mr. Houser gives specific suggestions, used by his own business, for the finding and developing of executives and persons for responsible positions. Included in this list is the idea that promotion from within is a sound policy. This involves an adequate supply of young employes and satisfactory training for them by means of planned exposure to various company jobs. A program for the selection and well-rounded training of persons of obvious merit is also suggested. Finally, there is the recommendation of a policy of planned expansion and early executive retirement, designed to create opportunities for capable employes. The idea of early retirement has been made a practical reality by the Sears profit-sharing and pension plan. The structure of a company should be such as to furnish recognition of worth; the author believes that decentralization is the type of organization best suited for developing the personnel of a company.

Equally important is the relation of big business to the public. Within this broad category would be included stockholders, customers, suppliers, and the community in which a corporation or unit of a corporation happens to be located. The same consideration is due these groups as is due the employes. For instance, a basic conflict between the interest of stockholders and long-range corporation policy exists; however, despite the fact that a corporation is a continuing entity independent of individuals, corporation policy should be in line to some extent with the present interests of stockholders.

A strong case is made for the point that large companies need not be destructive rivals of smaller firms, but, instead, can be an asset to the smaller companies which serve as retail outlets or sources of supply. This helpful relationship can be assured by a definite, long-term agreement between the large company and the smaller businesses.

By using examples of his corporation's policy, Mr. Houser points out how a corporation can serve the needs of the communities in which its units are located, and he stresses the importance of such service. Sears has taken an active interest in the welfare of both rural and urban areas. To aid agricultural development a project was undertaken whereby a gilt, heifer, or a number of baby chicks would be given to youngsters, with the stipulation that some of the offspring be given to other young people. This process of giving would then be repeated. The results were gratifying. In five years one boy who received a gilt from Sears grossed more than $10,000 from its progeny. According to the author, in Texas approximately 90 per cent of all swine shown at state and county fairs are the progeny of progeny of swine given by Sears.

A great interest in medical care and education has also been displayed by Sears. A program has been devised to enable loans to be made to doctors for the purchase of necessary equipment. This loan program arose out of the company's concern over the distribution of medical care in this country. Sears has established scholarship programs to enable high school youths from country and city to have a college education. Scholarships are given for land-grant colleges, state-supported schools, and independent schools. In the latter case, scholarships to smaller institutions are encouraged because the company is aware that the small independent college often is greatly in need of financial aid.

Considerable space is devoted to discussing the problems faced in establishing stores in Latin American countries. This section of the book, though interesting, is of limited application because it deals with a specific project.

Mr. Houser's basic idea is summed up in his conclusion, when he states that "when business accepts the freedom of our competitive system, it must also accept the responsibility for turning its strength to the service of the common good." In his discussion of the role of big business in our society and its relationship to persons, Mr. Houser offers a constructive policy, and he fills it out with workable ideas for enabling the large corporation to serve people as individuals and the community. This book will remind business leaders of their responsibility to serve and possibly stimulate them to work out constructive and beneficial company policies.

* *Published by McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. (Special edition for distribution by Sears Roebuck and Company to its employes and friends and is not for sale.)*

## NUMERICALLY CONTROLLED MACHINE TOOLS—IMPLICATIONS FOR MANAGEMENT*
### By H. Clifton Morse and David M. Cox

This report is a translation of highly technical material into the nontechnical language of management. The authors feel the role of the controller in the investigation, evaluation, and installation of numerically controlled machine tools (NCMT) is a vital one. The controller is involved from the beginning to the completion of a developed program of automation. For this job he requires an understanding of the technical aspect of the project.

The conservation-cost reduction procedure details a program for money-saving ideas from company to company. This is a relatively new management activity which has been of great benefit to participating firms.

The report contains a special section on the controllership function, which describes the general functions of the con-

troller in a typical manufacturing company. Where an investigation is under way under NCMT, the functions of the controller in the investigating group are discussed. Then, each of the general functions is re-examined in terms of the resultant action on the general function.

Special attention is given to the purchase of new machine tools; this includes a detailed machine replacement analysis procedure. Other subjects covered include rental versus purchase of new tools, and tax and capital considerations. The material on compatibility discusses some of the problems involved in relating the needs of accounting and manufacturing under NCMT, plus other uses of computers and data-processing equipment.

** Available from Cox and Cox, Management Consultants, 333 North Michigan Avenue, Chicago 1, Illinois. $25.00.*

## EXECUTIVE'S GUIDE TO ACCOUNTING*

### By N. S. Wittner

The book presents an easy way for executives, business people and others to acquire a good working knowledge of accounting without going into technical detail. The book is not a text and it does not deal with accounting for its own sake. All the techniques and principles are shown from the executive angle—how each can be used as an aid to better decision-making and operational control—how each helps to better understand what makes business "tick." The author sets up a mythical corporation and shows the accounting life of this corporation for an entire year: from a simple double entry to accounting for corporate property, debts, capital, inventories.

** Published by Prentice-Hall, Inc., 70 Fifth Avenue, New York 11, N. Y. $7.50.*

## INTERNAL AUDITING*

### By Victor C. Brink

The second edition of one of the pioneer books in the field presents the best current practice in internal auditing, the extension of its procedures to operating activities, and its use as a major tool of management control.

** Published by the Ronald Press Company, 15 East 26th Street, New York 10, N. Y. $6.75.*

### OTHER BOOK ENTRIES

MANAGEMENT AND ORGANIZATION. By Louis A. Allen. *McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York 36, N. Y. $7.00.*

THE TECHNIQUES OF DELEGATING. By Donald A. Laird and Eleanor C. Laird. *McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York 36, N. Y. $3.95.*


*Now on press!*

CONTROLLERSHIP FOUNDATION'S REPORT ON

**BUSINESS BUDGETING**

Here is a pioneering study which discusses and appraises the budgeting policies and practices employed by a select group of 424 companies as a means of implementing the planning and control of operations.

The 363-page report describes actual budgeting practices and shows how they differ from procedures described in current literature. This study will aid the management of any industry in better understanding and more effective performance of its responsibilities.

All aspects of the budgeting policies and practices of the 424 companies are summarized in

- ✓ 93 tables
- ✓ 12 figures
- ✓ 4 appendices

Appraisal of business budgeting, plus comments and general observations, are in the extensive, easy-to-read text.

*Send in your order for*

BUSINESS BUDGETING

*$12.50*

*($10.00 to members of Controllers Institute)*

CONTROLLERSHIP FOUNDATION, INC.

*Research Arm of Controllers Institute*

TWO PARK AVENUE • NEW YORK 16, N. Y.

*Orders from nonmembers outside Continental U.S. and Canada must be accompanied by remittance*

# 1958-1959
# PRESIDENTS
## OF LOCAL CONTROLS
★
## CONTROLLERS INSTITUTE OF AMERICA

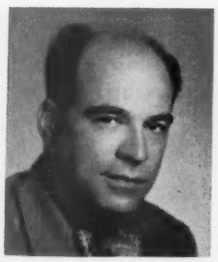
SECTION II*

**ROBERT W. REHFELD**
Southwest Lumber Mills, Inc.
*Arizona*

**JOHN E. GALLAGHER**
Cornell Aeronautical Laboratory, Inc.
*Buffalo*

**F. WILLIAM KAHRL**
The Cooper-Bessemer Corporation
*Columbus*

**COLLIS W. DEHAVEN**
Montgomery County Sanitary Department
*Dayton*



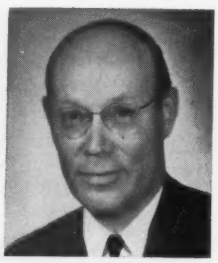
**BENJAMIN B. BROMBERG**
S. B. Hubbard Company
*Florida*

**M. S. PHEILS**
Playtime Products, Inc.
*Fort Wayne*

**W. MILLER BENNETT**
Inland Container Corporation
*Indianapolis*

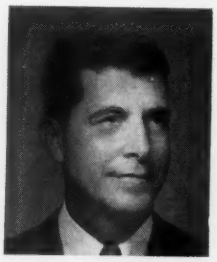
**EDWARD R. RIMMELS**
Eastman Dillon, Union Securities & Co.
*Long Island*

**EDWARD G. SOMMER**
Standard Oil Co., Inc. in Kentucky
*Louisville*

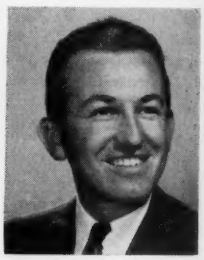


**JOHN C. BUMGARNER**
Sunray Mid-Continent Oil Company
*Oklahoma*

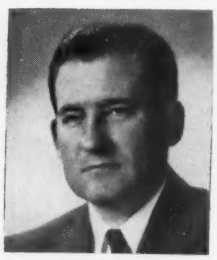
**T. AMES WHEELER**
Allegheny Ludlum Steel Corporation
*Pittsburgh*



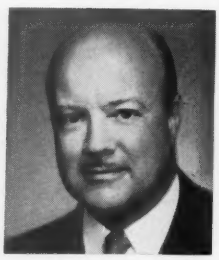
**F. M. ARMBRECHT**
Southern States Cooperative, Inc.
*Richmond*



**WILLIAM R. THOMAS**
Cutter Laboratories
*San Francisco*



**WINSTON D. BROWN**
Howard S. Wright Construction Co.
*Seattle*



**EARL J. WIPFLER**
Monsanto Chemical Company
*St. Louis*

**JOHN R. KAHLER**
Sandusky Foundry & Machine Co.
*Toledo*

**J. A. ROSS**
Shell Oil Company of Canada, Ltd.
*Toronto*

**FRANCIS D. SCOTT**
Red Owl Stores, Inc.
*Twin Cities*

* SECTION I comprising 17 Controls appeared in the July issue of THE CONTROLLER on page 334

SECTION III comprising the remaining 18 Controls will be published in the September issue

## Hart: "Recession Is Challenge"

G. Arnold Hart, general manager, Bank of Montreal, told a joint dinner meeting of the Hamilton Control of Controllers Institute and the Association of Chartered Accountants that the economy is on a plateau of business activity which was reached at the end of 1956 after climbing for nearly three years up an exceptionally steep slope. Mr. Hart said that he used the word "plateau" instead of the word "recession" which he pointed out is being frankly used these days.

The plateau, he noted, is a very uneven ground and the various expenditure and income strains have been changing, in their rate of flow, at different speeds and directions. Consumer expenditures, which account for the major part of all national expenditures, have continued on a gradual rising trend during the past 15 months while government purchases and payrolls have tended to be higher. Exports for Canada have held up well, but total Canadian imports have declined significantly since the beginning of 1957 with the result that Canada's deficit in trade and other current transactions with the rest of the world has been narrowing.

Expenditures for new residential construction have followed yet another pattern in that they declined steadily from the second quarter of 1956 to second quarter of 1957 but since then, with the injection of new money by the banks and by the Canadian Government, they have been recovering quite markedly. The speaker said that he took exception to a statement made by the governor of the Central Bank in his recent report to the effect that Canada did not experience tight money in one sense of the phrase. "While it is substantially true that there is no contraction of bank deposits during 1956 and 1957 (other than those which are a regular seasonal occurrence) there was, on the other hand, virtually no increase of any significance permitted (apart again from changing seasonal requirements) in a period of close to two years. He pointed out that monetary restraint has in recent months given place to monetary ease and that "it may take some time for easy money to be reflected in expanding demands for credit, just as it took time for tight money to be felt."

In his conclusion Mr. Hart commented: "I cannot help but feel, therefore, that we may be moving for a while yet on something like the plateau we have been on and coping with the same kinds of problems that have been besetting us. Of one thing we can, I think be sure. Conditions will be more, not less, competitive—competitive in interesting and selling the buyer, competitive in keeping down the prices and keeping up profit margins and, more basically, competitive in holding down unit costs in the face of unmitigating pressures for higher wage rates."

*Program*

MONDAY

A.M. BUSINESS MEETING FOR MEMBERS
TECHNICAL SESSION
Opinion Research Corporation

NOON LUNCHEON
*Speaker:* Clifford F. Hood, president, United States Steel Corporation

P.M. TOPICAL CONFERENCES
*Subject:* Economic Depreciation
*Speaker:* Carman Blough, director of Research, AICPA
*Subject:* Direct Costing *(Panel discussion)*
*Moderator:* Wayne Keller, comptroller, Armstrong Cork Company
*Subject:* Legal Aspects of Records Retention—Controllership Foundation

TUESDAY

A.M. TECHNICAL SESSION
Management and Control—du Pont's Concepts and Methods

NOON LUNCHEON
*Subject:* Personnel Development in a Large Corporation
*Speaker:* Dr. D. H. Dawson, vice president, E. I. du Pont de Nemours & Company

P.M. INDUSTRY ROUND TABLES

EVE. BANQUET/DANCE

WEDNESDAY

A.M. PANEL DISCUSSION
*Subject:* Corporate Finance and the Money Market
*Speakers:* Walter Hoadley, treasurer, Armstrong Cork Company, an investment banker and a commercial banker

NOON LUNCHEON
*Speaker:* Ronald Reagan

ALSO SPECIAL EVENTS FOR THE LADIES

*Sponsored by the Philadelphia Control of Controllers Institute*

**CHALFONTE ★ HADDON HALL · ATLANTIC CITY**

# Salaries of Office Supervisors and Foremen Surveyed

PAY of first-line foremen, general foremen, and office supervisors rose an average of 5.2 per cent last year, the American Management Association reports in its third annual survey of supervisory management compensation. Annual salaries for all types of office supervisors and first-line foremen range from $4,000 to $9,100, and pay for general foremen falls between $6,400 and $13,300, the study indicates.

The survey covers the compensation currently paid to more than 8,600 supervisors in 129 different companies in all parts of the United States. Nearly 6,600 of the supervisors included are first-line foremen; 1,350 are in charge of some office activity; and approximately 700 are general foremen at the second line of management. Fifty different kinds of supervisory activity were included in the study, ranging from accounting, clerical, billing, and tabulating functions in the office to various types of production, maintenance, and trades work in industrial plants.

The companies participating in the survey represent 46 different categories of industry and commerce, the great majority in the general field of durable and nondurable goods manufacturing. Annual sales of these companies range from less than $5 million to more than $500 million, and the number of personnel they employ varies from less than 500 to more than 10,000.

In general, the survey shows, the rate paid to the individual supervisor varies directly with the level of responsibility involved, the complexity of the work supervised, and the number of employes supervised. While different activities vary widely in this respect, the average number of employes supervised ranges from 10 or 15 at the lowest levels of supervision up to 200 or more at the general foreman level.

The survey also covers rates of pay in specific industries such as the petroleum and chemical industry, utilities, and banks and insurance companies and in various geographic areas. These factors are less significant in determining compensation levels, the survey suggests, than are factors related to the nature of the job.

One of the principal problems that companies face in compensating this level of management, the report notes, is the maintenance of adequate differentials between the rates of supervisors and those of the people they supervise. Under the upward trend of wage levels that has prevailed for some years, more than half of the companies surveyed have granted general increases to supervisors in order to maintain these differentials.

Also discussed in the report are such compensation practices as position evaluation, shift differentials for foremen, merit increases, overtime pay procedures, and bonus and incentive plans. Some of the bonus and incentive plans especially designed for supervisory management contain an incentive factor that rewards the supervisor for the contribution he makes in controlling expenses of the department or section for which he is responsible. Other plans give credit for such varying elements as unusually heavy work load and the company's sales growth.

## Consumer Finances

By the end of 1957, the total financial assets held by individuals amounted to $484 billion, the highest of any year in the past decade. America's debt level, however, was higher, too, as liabilities in the form of mortgage, consumer and security loans rose from $66 billion in 1951 to $142 billion at the end of 1957. An increase of better than $5 billion in cash holdings and bank deposits during the final six months of 1957 contributed heavily to the rise in individual savings. Holdings of U. S. Savings Bonds decreased, but ownership of securities increased by more than $6 billion, with corporate security investments accounting for the bulk of the rise. Savings in the form of private insurance and pension reserves gained by almost $8 billion during the year.


**WANT HELP?** *Swamped by all the material on electronics? Can't find information on specific applications of electronics? Want to know experiences of companies converting to electronics?*

If your answer to any of these questions is affirmative, the list of reports on ELECTRONICS IN BUSINESS may help you. Send your request to

**CONTROLLERSHIP FOUNDATION**
**Two Park Ave., New York 16, N. Y.**

**WALTER D. FULLER COMPANY**

PUBLIC LEDGER BUILDING • INDEPENDENCE SQUARE
PHILADELPHIA 6, PA. MARKET 7-3734

*FACTS ABOUT FULLER SERVICE*

The accumulated know-how and talents of lifetime careers are applied to our clients' special projects at a modest cost. "Human Capital" is added to our clients' assets without adding permanent obligations—no problems of fringe benefits, pension, withholding, etc. because our specialists are independent contractors—when they complete an assignment, they are through.

Our specialists are experienced as corporate officers; sales, advertising and public relations experts; business proprietors; systems, methods, accounting, banking, insurance, investment and financial professionals; industrial, employee and labor relations experts; mechanical, electrical, chemical, architectural, mining, civil, municipal and electronic engineers; research, development and inventive scientists; manufacturing, processing, materials handling, packaging, distribution, merchandising and production experts—900 mature specialists in 130 varieties of business experience—located all over the United States —available to clients part-time and for special projects of limited duration.

We welcome your inquiries.

WALTER D. FULLER
*President*

RC INC

will set up a retention schedule program for you . . . assuring that old records will be available when needed and yet disposed of promptly as soon as usefulness is ended.

**RECORD CONTROLS, INC.**
CHICAGO • 209 S. La Salle Street

# Survey Presents Revealing Data on Electronics in Business

REAL FACTS AND FIGURES were contributed to the current dispute on the merits of electronic data processing by John Diebold, president of the consulting firm of John Diebold & Associates, Inc., in a speech delivered to Controllers Institute of America in New York. Mr. Diebold revealed partial results of a survey of 3500 companies conducted by his firm. Some of these results lend substance to current critical re-evaluations of management's approach to electronic data processing. Companies that rely solely on clerical cost reductions as justification for computer installation are likely to be disappointed. Of the 300 respondents to the survey that have installed computers, 47% of large computer users stated that the introduction of the computer had added to or produced very little savings in clerical costs. Similar experiences were reported by 58% of the medium-scaled computer users and 65% of the small-scaled computer owners.

Along the same line, 72% of the reports indicated a monthly saving of less than $5,000 per month to be used to amortize the conversion and installation costs and provide a profit. On the other hand, Mr. Diebold emphasized 35% of the large computer owners reported savings in clerical costs of over $50,000 per month. The reasonable conclusion is that where the program had been well managed, it can produce real savings, but that in many cases it has not been well managed.

The survey indicated some satisfaction with a computer's contribution to other areas. The survey asked whether results had lived up to expectations in the "intangible" areas. Almost 100% of the respondents said that their systems and procedures had been improved as expected. In other fields, 94% said their accuracy expectations had been met; 91% were satisfied with their new analyses of data. Expectations of faster management reports were met in 81% of the cases, while expectations for reduction of peak loads were met in only 58% of the cases. These figures would indicate that one should look for benefits from computers other than clerical cost savings alone, Mr. Diebold said.

On the other hand, even these results do not paint so rosy a picture as first impression indicates. In the first place, there is the possibility that results do not come up to expectations so much as expectations come down to results. Face to face conversations with many users do not give such an impression of satisfaction, Mr. Diebold indicated. But figures themselves present another side, because even here the dissatisfied minority must be considered. For instance, in 42% of the cases, the computer installation did not meet expectations in solving the peak load problem, while in 19% of the cases the expected faster management reports did not materialize. In about 35% of the cases, users were disappointed in the performance of their program in supplying new and better facts for management decision.

On a more general basis, 42% of the respondents with computers indicated that their experience with the over-all automatic data-processing program had fallen below the norm which they had established.

Mr. Diebold went on to examine the reasons for these diverse results, so many of which are bad. In nearly all cases, respondents stated that the computer itself was not to blame, that the machine from a technical point of view was not responsible for their disillusionment.

Thus, the varied results seem to indicate only one thing—management. Mr. Diebold's analysis indicated that there had been a widespread underestimation by management in the field of automatic data processing—an underestimation of the costs, the difficulties and the magnitude of the task of planning and control, and an underestimation of the real potential of automatic data processing. Mr. Diebold's solution was for management to recognize the real nature of the task and to organize to meet it. Deciding against a computer installation is often the right decision, but just as one should not say "yes" through glamour and emulation, one should not say "no" through fear or complacency, Mr. Diebold continued.

Mr. Diebold then went on to relate some of the stories behind the figures. He cited case histories that had been prepared for a course in data processing now being given by the Management Science Training Division of John Diebold & Associates, Inc. He gave examples of the most common mistakes that had been made in the past: failure to define objectives, improper organization of the data-processing program, improper approach to designing the system, inaccurate estimates of the real costs involved in conversion and installation, ill-defined standards of performance, poor personnel practices, and poor selection of applications. Mr. Diebold traced all these pitfalls to lack of planning and control on the part of management. He reiterated his conclusions that automatic data processing is a management problem.


*Announcing a digest of*

**PRODUCTIVITY ACCOUNTING**

*by*

*Hiram S. Davis*

As a service to executives, desirous of keeping in touch with important business publications yet pressed for time, *Controllership Foundation* publishes a series of digests of *important* business books.

**PRODUCTIVITY ACCOUNTING,** published by the University of Pennsylvania Press, presents a method for measuring the productivity of a business that is as useful in periods of rapidly changing prices as it is when prices are stable. An illustrative application of the method is given and the theoretical and practical difficulties are considered. Five uses of the technique are then discussed:

1. Over-all measure of the efficiency of a firm
2. Analytical audit of past performance
3. Budget control of current performance
4. Common-price financial statements
5. Measurement of initial distribution of the benefits flowing from gain (loss) in the firm's productivity.

**Copies of the 50-page digest available at $1.00 each from**

**CONTROLLERSHIP FOUNDATION, INC.**

*Research Arm of Controllers Institute*

Two Park Avenue
New York 16, N. Y.

*Orders from nonmembers outside Continental U. S. and Canada must be accompanied by remittance*

IBM MANAGEMENT INTERVIEW

GOLDEN MILESTONE GENERAL MOTORS

J. C. Fisher, Robert M. Wagner, James R. Bolton—the men who led the electronics program at Buick.

# HOW IBM HELPS BUICK BUILD BETTER CARS

An exciting new tool in the auto industry's continuing efforts to build even better cars is the IBM 705 electronic data processing system. From complex production scheduling to the design of new transmissions, the IBM 705 is helping to bring a startling revolution to the auto industry.

As exciting as any story is that told by the Buick Division of General Motors. Here, reporting on Buick's progress is the management team that spearheaded the IBM 705 program. Led by General Manager and GM Vice President Edward T. Ragsdale, they are: Robert M. Wagner, General Production Manager, James R. Bolton, Comptroller, J. C. Fisher, Superintendent of Data Processing.

**Q. What is the IBM 705 doing for you?**

**A.** The biggest thing right now is helping us keep our production of parts and sub-assemblies keyed to a constantly changing public demand . . . so we can ship a Buick exactly the way the customer wants it, in the shortest possible time.

**Q. What's involved in this?**

**A.** It means controlling the flow of production from 2000 different suppliers who furnish us with some 3500 different parts and assemblies, ranging from bolts to complete bodies.

**Q. How is the IBM 705 improving your handling of this flow of materials?**

**A.** When a sales trend was spotted that made a change in our schedules necessary, it used to take two weeks to make the change—that is, to do all the paperwork and computing. And that's with plenty of overtime. Today the IBM 705 does all this work, including printing new contracts for mailing, in *seven hours.*

**Q. Do you gain other benefits from your IBM operation?**

**A.** Oh, we're using the machines in many areas of our business. We get our parts sales analysis reports ten days sooner; we get operating reports on a daily basis that were never possible before. And, as I've mentioned, our engineers are even building better Buicks with this IBM 705 computer.

**Q. What's the advantage of using a computer in the design stages?**

**A.** It helps us cut down on the expensive procedure of actually building premature prototypes to test a new

design. The IBM 705 can figure performance or design characteristics mathematically... to save both time and money.

**Q. Well, how does the IBM 705 do this?**

**A.** Our "car performance prediction" procedure is one of the most interesting examples. There, the IBM 705 puts mathematics to work to ascertain what a new engine or transmission will deliver in a new automobile under all expected operating conditions. A testing procedure like this normally takes hundreds of thousands of dollars and months of engineering work. The IBM 705 takes about one-half hour to come up with a complete performance report.

**Q. Aren't these problems a man could solve if the time were available?**

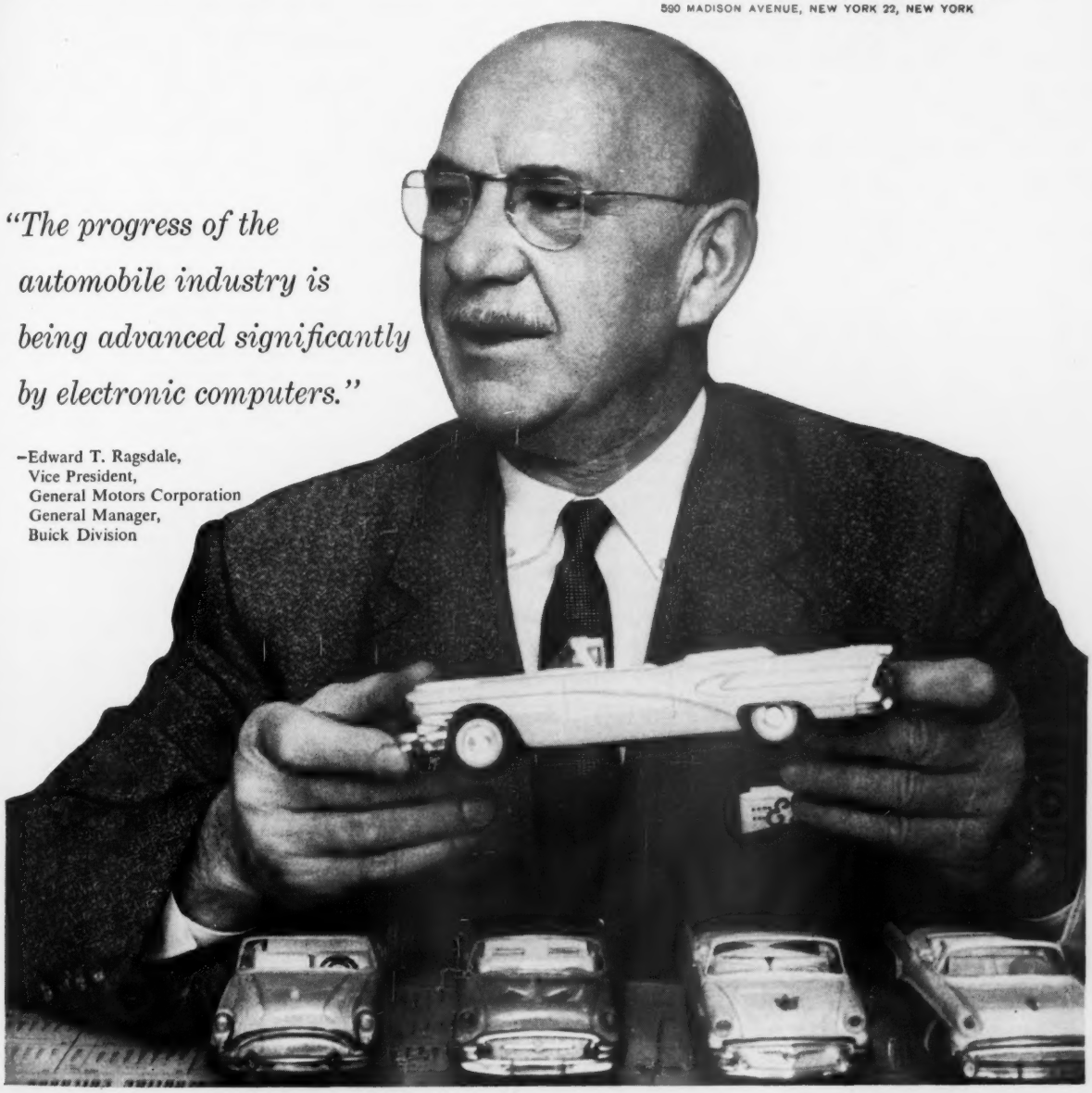
**A.** Of course, but what the system does in minutes would take a man months or years. Recently, the IBM 705 handled in a minute-and-a-half a job that once took a week-and-a-half. The mathematics involved in producing the car performance reports we spoke of would take an engineer decades to calculate, if he chose to do it without the aid of electronics.

**Q. Then, actually you're doing things that were once entirely impossible.**

**A.** Realistically speaking, yes. An engineer used to start with the first design that met his requirements. Today, we're running off the many possibilities of a design so that he can pick the most effective *in advance*. We've gone far . . . but we've only begun to realize the possibilities of electronic data processing.

**IBM DATA PROCESSING**

INTERNATIONAL BUSINESS MACHINES CORPORATION
590 MADISON AVENUE, NEW YORK 22, NEW YORK



*"The progress of the automobile industry is being advanced significantly by electronic computers."*

–Edward T. Ragsdale,
Vice President,
General Motors Corporation
General Manager,
Buick Division

## The Advertising Budget

*(Continued from page 369)*

6. Example of model *assuming decline* in business cycle, assuming:

a. Our objective is to maximize profits rather than sales,

b. Our product volume has fluctuated in the past with the general business cycle,

c. In business cycle downswings, advertising costs do not produce enough additional sales to justify the additional advertising costs. That is, the company which increases advertising does not increase its profits over one which does not increase its advertising costs, even though it may increase sales volume.

d. Our customers are a stable lot in terms of the time period over which they remain in the market—i.e., risks in cutting back advertising are justified.

e. Our products are not unduly sensitive to advertising promotion.

We set forth the general advertising level possibilities open to us and to our competition. In this case, we simplify the problem by considering competition as one player against us, because we assume the competition is not in a coalition against us. A coalition of competitors directed against us would require different calculations. Our rank of the alternatives is shown in *Table II* (remember, this ranking is for downswings in the business cycle, only).

For calculation of our optimum course, or combination of courses, we set forth the preceding in a matrix, as shown in Table II-a. Because the lowest of the column maxima and the highest of the row minima are the same (f) we should never vary our strategy; we should always follow strategy #1, cut expense in a declining business cycle. The worst result we can obtain will be fair, and could be excellent if the competition cuts along with us. A coalition in which *all* industry members took part to reduce advertising would seem to be an excellent economic, although probably illegal, maneuver.

The foregoing example is a simple one because, while we ranked the alternatives in line with our best judgment, the result came out "f" in both the lowest of the column maxima and the highest of the row minima.

If we had ranked any of the nine possible alternatives differently, a matrix may have resulted in which the highest of the row minima was different from the lowest of the column maxima. In such case, a combination of our three basic courses of action should be taken according to proportions that can be developed by relatively simple solutions of matrixes using game theory in which arbitrary values are assigned to the various letters, for example:

| | |
|---|---|
| Excellent | = +10 |
| Good | = + 5 |
| Fair | = 0 |
| Poor | = — 5 |
| Very Poor | = —10 |

Substituting these arbitrary values for the letters would enable a person familiar with the solution of game theory matrixes to tell you the proportion in which each of the three strategies should be used.*

The reason we would have to vary strategies in some optimum proportion is because, where there is no "balancing" of "maxmin" and "minmax" indicating one best strategy that should always be followed, the competition will probably become aware of our unvarying reactions under given circumstances and take the course of action that will help them most at our expense.

7. An example of model assuming upswing in business cycle and its matrix of alternatives are shown in *Tables III* and *III-a*. Once again, under our ranking of alternatives, we have a situation where we have "f" as the maximum of the row minima and "f" as the minimum of the column maxima. Here too, we should follow only one course, alternate #3, as a result of which we will always come out with at least a fair result, and can possibly achieve an excellent one.

Other individuals might very well rank some of the nine alternatives differently, with the result that the maxmin and the minmax may not be the same. In such a case, as we mentioned before, arbitrary values can be assigned to the letters and optimum combinations of the three basic courses open to ourselves can be determined.

In the preceding examples, the ordering of benefits was based upon one company's assumptions; each company must set its own order of benefits according to its own good judgment. The important thing is that an ordering of benefits be arrived at.

Let's look back at the retailer who decided that, in good times, he could increase his sales of the $100 unit by 200 units *(Table I)*. We had calculated an advertising budget of $2,400 so as to enable him to buy the unit at $60.00, pay 10% commission on sales, and yield an 18% contribution to income. This retailer, would, in our opinion, be foolish to go blindly ahead with the $2,400 program if general business were falling or if he knew that a competitor would advertise the same product at the same time. Frequently, such advertising is promoted or partly subsidized by the product manufacturer and there is great risk that competitors will avail themselves of the same promotion aid.

Assuming general business going along fine, the retailer who believed his competition would also promote the item to the extent of diluting the increased sales expected by 50% would have to cut the advertising costs 50% if he wanted to retain his required 18% rate of marginal contribution to income *(Table I-a)*.

The retailer faces a more difficult problem in downswings in the business cycle. If past experience has shown that demand is harder to increase under such conditions, he has to decide whether to spend more money than he would in good times to go after the full 200 plus units or cut back his advertising expenditures, using maximum quality media to hold his advertising to a level that will maintain his 18% gross profit objective. If the retailer decided that 100 units was a realistic level of plus volume, then he could, again, spend only $1200 on advertising to maintain his 18% marginal contribution to income objective. The problem is further complicated because, while he will aim at the 18% rate of marginal contribution to income, he may actually need a rate greater than 18% in business downswings because his marginal contribution to income in absolute dollars (at the 18% rate) will probably be declining faster than his ability to lower his so-called "fixed" expenses. If the retailer decided he would need a 20% rate, then the advertising expenditure in the preceding example would have to be reduced to $1,000 to yield $2,000 marginal contribution to income on $10,000 of sales *(Table I-b)*.

We set forth the preceding examples of the retailer's problem to show in simple terms that advertising programs must take into consideration the two elements that seem to be frequently overlooked—the effect of competitors' advertising and the fact that the degree of advertising effectiveness fluctuates in some relationship to the general business cycle.

In our opinion, while sales promotional efforts must be increased during downswings in the business cycle, as advocated by most of the management counsellors, care must be used to differentiate advertising from sales promotion.

And, above all, in periods of declining sales do not confuse increased sales with increased profit; those last few dollars of increased sales have to be paid for and may very well not be worth their cost.

* A primer on this method, requiring only a knowledge of arithmetic is "The Compleat Strategyst" by J. D. Williams, a Rand Corporation Research Study published in 1954 by McGraw-Hill Book Company, New York.

## TABLE II
## DOWNSWINGS

| | |
|---|---|
| 1. We cut, competition cuts | Excellent—Because we know we will cut expenses and have reasonable assurance that our market share will remain the same. |
| 2. We cut, competition holds even | Good—We take steps to cut our outlays, and the competition should not pick up too many sales that would otherwise have gone to us. |
| 3. We cut, competition increases | Fair—While we have cut expenses, there is a chance that the competition might put together our decrease and his increase to net enough volume to hurt us slightly. |
| 4. We maintain, competition cuts | Fair—We have at least a chance to maintain our profit level. |
| 5. We maintain, competition maintains | Poor—We both maintain our advertising costs while sales will decline. Profit level will probably decline. |
| 6. We maintain, competition increases | Fair |
| 7. We increase, competition cuts | Fair—We will get a real chance of picking up volume and may pick up a profit. |
| 8. We increase, competition maintains | Poor |
| 9. We increase, competition increases | Very Poor—We both increase our advertising costs with little or no chance to increase volume. Can anyone win? |

### TABLE II-a

| | | OUR COMPETITION 1 (cut exp.) | 2 (maint. exp.) | 3 (inc. exp.) | Row Min |
|---|---|---|---|---|---|
| | 1 (cut exp.) | e | g | f | f* |
| OUR | 2 (main. exp.) | f | p | f | p |
| COMPANY | 3 (inc. exp.) | f | p | vp | vp |
| | Column max | e | g | f* | |

## TABLE III
## UPSWING

| | |
|---|---|
| 1. We cut, competition cuts | Good—Basically, the product was assumed to be relatively inert to advertising. Other products would rate a different grade. Profits should increase. |
| 2. We cut, competition holds even | Fair—The competition will get the jump on us but we will probably at least maintain our past profitability. |
| 3. We cut, competition increases | Very Poor—We stand to lose a golden opportunity and add value to our competitors' advertising program. |
| 4. We maintain, competition cuts | Fair—We have probably lost a chance to pick up profitable volume, but we should not lose ground, profitwise. |
| 5. We maintain, competition maintains | Fair—We should hold our present position, both industrywise and profitwise. |
| 6. We maintain, competition increases | Poor—We may lose an opportunity due to inertia on our part. |
| 7. We increase, competition cuts | Excellent—We will probably increase profits and volume faster than the competition. |
| 8. We increase, competition maintains | Good—We will gain ground but at a lesser rate than 7 above. |
| 9. We increase, competition increases | Fair—We will hold our own only, but the increased volume should at least break us even profitwise. |

### TABLE III-a

| | | OUR COMPETITION 1 (cut exp.) | 2 (maint. exp.) | 3 (inc. exp.) | Row Min |
|---|---|---|---|---|---|
| | 1 (cut exp.) | g | f | vp | vp |
| OUR | 2 (main. exp.) | f | f | p | p |
| COMPANY | 3 (inc. exp.) | e | g | f | f* |
| | Column max | e | g | f* | |


A NEW APPROACH TO
**BUDGETING**
Write for Information
McCORMICK & COMPANY
*Consulting Engineers*
Park Building Yonkers, N.Y.

***New!*** A COMBINED REPRINT OF ARTICLES FROM THE CONTROLLER on **RETIREMENT**

April 1958
ARE CONTROLLERS PLANNING FOR THEIR OWN RETIREMENT?
James V. Class

May 1958
KEEPING BUSY THOUGH RETIRED
Royal B. Alcott

Two Book Reviews
April 1953
Some Observations on Executive Retirement. By Harold R. Hall. Reviewed by K. Y. Siddall

May 1958
Retirement: A New Outlook for the Individual. By Gifford R. Hart. Reviewed by Louis M. Nichols

***$1.00***
*Address Reprints*
THE CONTROLLER
Two Park Avenue New York 16, N. Y.

**American Appraisals speed up loss adjustment**

The adjuster knows that figures in an American Appraisal report are fair to all concerned, because they are always based on detailed evidence and experienced judgment.

**The AMERICAN APPRAISAL Company ®**
leader in property valuation
HOME OFFICE: MILWAUKEE 1, WIS.

*You should have this*

**BUSINESS ELECTRONICS REFERENCE GUIDE—VOL. 4**

*if you want information on*

✓ **ELECTRONIC COMPUTER INSTALLATIONS AND APPLICATIONS**
Complete information on 383 computer users, giving the equipment they have, the actual applications. Also, index of applications and summary of machines in use.

✓ **ELECTRONIC DATA-PROCESSING SYSTEMS**
Reports of 34 U. S. and foreign computers available for business applications. Also operating characteristics, rental or selling price, etc.

✓ **COMMERCIAL COMPUTING CENTERS**
Reports on 71 U. S. and foreign computing centers. Gives make, model and number of computers installed.

✓ **ANNOTATED REFERENCE TO PUBLISHED MATERIAL**
Detailed descriptions of 416 periodical articles, 246 pamphlets, etc., and 28 books—all published between July 15, 1956 and January 31, 1958.

& **ADDITIONAL MATERIAL PERTAINING TO ELECTRONIC MACHINERY**
including annotated reference to published material, description of courses/training programs and seminars, details on film/slides and their availability, index of publications and publishers, listing of subscription services in business electronics.

Here is a thorough and up-to-date guide which will provide the information you want in your investigation of business application to electronic machines. This guide will be an invaluable aid to you in any discussion or study of business electronics. For the latest and most complete information

*Order Now!*

*$15.00*

*($10.00 to members of Controllers Institute of America)*

CONTROLLERSHIP FOUNDATION, INC.
*Research Arm of Controllers Institute*
TWO PARK AVENUE • NEW YORK 16, N. Y.

*Orders from nonmembers outside Continental U.S. and Canada must be accompanied by remittance*

## Circulation Accounting Manual Issued by INCFO

A circulation accounting system combining all essential elements involved in distribution of a daily newspaper is set forth in the new "Circulation Accounting Methods and Procedures Manual" just issued by the Institute of Newspaper Controllers and Finance Officers. The new INCFO manual, which is the first of a series devoted to accounting for newspaper revenue in all its forms, has three sections devoted to distribution of a newspaper—through carriers, through dealers/distributors, and via truck routes and mail.

It includes all forms necessary to start or stop delivery, and to control prepayments, refunds and collections. All forms in the manual are presented in sufficient detail so that readers may copy or adopt them when preparing forms of their own. The manual also contains an organization chart which shows how job functions within the controller-treasurer's department and the circulation department can be aligned for efficient coordination.

## Tax Conference in Chicago

The Eleventh Annual Federal Tax Conference, co-sponsored by the University of Chicago Law School and the University College of the University of Chicago, will be held on October 29, 30, and 31, 1958. The Conference will concentrate on various problems in taxation which will be covered in special examination by prominent lawyers and accountants; panel discussions in which audience participation is invited; and an extensive round-table discussion. Ample time will be allowed at each meeting to discuss questions contributed by participants.

For details on registration for this Conference, address University College, The University of Chicago, 19 South La Salle Street, Chicago 3, Ill.

## Women Accountants to Celebrate Two Anniversaries

The Eighteenth Joint Annual Meeting of the American Woman's Society of Certified Public Accountants and the American Society of Women Accountants will be held at the Hotel Statler, Detroit, Michigan, October 8-11, 1958. These professional organizations are celebrating their 25th and 20th anniversaries respectively. For further details address Elsie Van Wie, 2848 Fairway Drive, Birmingham, Alabama.

**APPRAISALS**
NATIONAL ORGANIZATION OF APPRAISAL ENGINEERS
**STANDARD APPRAISAL COMPANY**
BOSTON PHILADELPHIA PITTSBURGH
**6 CHURCH STREET NEW YORK, N. Y.**
ATLANTA CHICAGO ST. LOUIS

# Clague Discusses Consumer Price Index

EWAN CLAGUE, Commissioner of Labor Statistics, in addressing the Milwaukee Control of Controllers Institute at its April meeting, predicted that prices of new cars, refrigerators, television sets and appliances will slide down to autumn lows before the 1959 models go on sale.

Mr. Clague said that the Bureau of Labor Statistics was often asked to answer why the price index continued to rise in the midst of a business downturn with mounting unemployment and he pointed out that food prices respond to seasonal trends while the costs of services lag behind business conditions.

The Consumer Price Index, Mr. Clague assured the members of the Milwaukee Control, is accurate. The Index includes about 300 different commodities as based on reports from 46 cities of varying sizes. Answering some of the criticisms made of the Index, the Commissioner stressed that the BLS makes every effort to obtain the final realized price of an item rather than accepting list prices for durable consumer goods. The Bureau, he noted, makes allowances for trade-ins and gets prices from specialty stores which are likely to give heavy discounts. He answered criticisms in not using week-end prices for foods by saying the primary purpose is to measure changes in prices rather than to determine the level of prices and the result is the same if the changes are measured from the first of the week or the end of the week.

The limitations in the Index, he went on, are recognized by BLS and it was partly because of the limitations that the Index was changed from the "cost of living" to "consumer price index." The cost of living, he asserted, can increase in many ways: through the addition of children to the family, moving from one town to another, or shifting from a low-priced car to a high-priced one. Any decline in the quality of an item is taken into account in preparing the Index and any improvement in quality is "factored" out as far as possible from the price increase. He warned that it is not always easy to maintain the constant quality because, in the case of automobiles for instance, accessory equipment becomes standard as the years go by and while this can be measured, the items of easier riding and styling cannot be measured.

Mr. Clague concluded by saying that the effect of the unmeasured improvements is extremely small in the short-run. From month to month, and for a few years, they would have very little effect. Over a ten-year period, or longer, they could be quite significant. About every 10 or 15 years, the Index should be basically revised in order to enhance general accuracy.


Better sales records will ~~can~~ build better sales

R & S data processing of your sales will give you *all-inclusive* reports almost as soon as the sales take place—

**BY TERRITORY—national, state-wide, city . . . by customer, class of outlet, product (including size or color range)—and by *salesman*.**

You get week to week, or month to month break-downs and comparisons in dollars or percentages, plus quarterly and year to year analyses. You quickly spot trends, pinpoint weaknesses and measure advertising effectiveness of local and national campaigns.

R & S can handle every sort of data processing—in any volume—CALL AN R & S REGIONAL CENTER TODAY for consultation and estimates—no obligation.

RECORDING & STATISTICAL CORPORATION

R&S

NATION-WIDE SERVICE

NEW YORK: 100 SIXTH AVENUE, NEW YORK 13, N. Y. WOrth 6-2700
BOSTON: 566 ATLANTIC AVENUE, BOSTON, MASS. LIberty 2-5365
CHICAGO: 223 WEST JACKSON BOULEVARD, CHICAGO 6, ILL. HArrison 7-7357
SAN FRANCISCO: 560 SACRAMENTO STREET, SAN FRANCISCO 11, CAL. EXbrook 2-4341
MONTREAL: 407 McGILL STREET, MONTREAL, CANADA. PLateau 3831
TORONTO: 439 WELLINGTON STREET, WEST, TORONTO, CANADA. EMpire 3-4951

# LONG SHOTS & CLOSEUPS WITH THE CONTROLLER CAMERA

### *New York City* (TOP RIGHT)

Conference programming and allied subjects were discussed by this group of members of Controllers Institute of America which included (*left to right*) Donald P. Jones (comptroller, Sun Oil Company, Philadelphia, Pa.), general chairman, 1958 Annual National Conference; Edward H. Eaton (treasurer, Pittsburgh Plate Glass Company, Pittsburgh, Pa.), program chairman, 1959 Annual National Conference; William J. Matthews, Jr. (vice president and treasurer, American Zinc, Lead & Smelting Co., St. Louis, Mo.), representing the 1962 Annual National Conference; W. T. McGillivray (controller, California Packing Corporation, San Francisco, Calif.), representing the 1960 Annual National Conference; and Herman W. Stein (controller, A. C. Nielsen Company, Chicago, Ill.), program chairman, 1964 Annual National Conference.

### *Baltimore, Md.* (LOWER LEFT)

Past presidents (*standing*) of the Baltimore Control of Controllers Institute were honored at a dinner meeting in the Belvedere Hotel on May 27, at which the Fifteenth Anniversary was observed. Those seated include (*left to right*) Donald P. Jones, comptroller of Sun Oil Company, Philadelphia, Pa., and vice president of Region III of the Institute; William B. Alexander, president-elect of the Control, and vice president of Fidelity-Baltimore National Bank & Trust Company; Program Chairman James F. Flynn, controller, Commercial Credit Company, Baltimore; Emmett J. Leahy, who spoke on "Stemming the Floods of Paperwork"; Paul Haase, managing director of Controllers Institute; and Edmund L. Grimes, past president of Controllers Institute and chairman of the Board of Commercial Credit Company.

### *Paris, France* (LOWER RIGHT)

Brigadier General E. P. Hardenbergh, U. S. Army, comptroller at U. S. European Command Headquarters near Paris, France, is shown (*center*) being congratulated by William Guillaume Le Bigot, comptroller general of the French Navy (*left*), after being presented by the latter with the Cross of the French Legion of Honor for his efforts in behalf of stronger Franco-American relations. Lieutenant General William F. Lawton, comptroller of the Department of the U. S. Army, who was there on a visit from Washington, D. C., is shown at the right. The presentation was made in the name of President Coty of France and the decree accompanying the award was signed by French Premier Charles de Gaulle.

## Capital Expenditure Evaluation

*(Continued from page 365)*

A. *Are we being creative in our search for profitable opportunities?*
B. *Is our long- and short-range budget program satisfactory?*
C. *Is the control over authorized expenditures satisfactory?*
D. *Is there a satisfactory program for a post-completion audit of the earnings performance and the investment estimates?*
E. *Are the present forms and procedures adequate to handle the present and/or a revised capital expenditure program?*
F. *Is there an adequate training program to acquaint the necessary personnel with the economics and mechanics of capital budgeting?*

### VII CONCLUSION

In this article the writer has attempted to discuss the importance of the chief problems inherent in good capital expenditure management: that is, the measurement of the investment worth of individual proposals. Based on the previous analysis, it is my opinion that productivity of capital should be measured by rate of return rather than payback. In addition, I feel that prediction is essential; project worth depends solely on future earnings—the added earnings that will result from the added investment. Thus, future earnings need to be forecasted over the whole economic life of the facility. Moreover, I believe that an understanding of the basic premise involved in the mechanics of computation—bringing back to present value and equaling *cash inflow and outlay*—is vital for successful application of the time adjusted rate of return. Finally, it is my firm belief that good capital expenditure evaluation should assist all levels of management in the actual decision.

### APPENDIX A

A. Formula used to compute *Table A*

$$\frac{1}{(1+i)^n}$$

i = Interest rate
n = Number of years

B. Formula used to compute *Table B*

$$\frac{1-\frac{1}{(1+i)^n}}{i}$$

C. Summation of *Tables A* and *B*
1. *Table A* should be used to find the present value of a single payment received "n" years in the future.
2. *Table B* should be used to find the present value of a stream of uniform payments received for "n" years.

### APPENDIX B

D. Formula used to compute operating savings after taxes*

| | | | |
|---|---|---|---|
| Operating savings before taxes | | $200 | $200 |
| Less tax depreciation on new machines | $100 | | |
| Tax depreciation on present machines | 0 | | |
| Increase in taxable depreciation | $100 | | |
| Less tax interest | 25 | | |
| Total tax deductions for interest and depreciation | | $125 | |
| Net increase in taxable income | | $ 75 | |
| Increase in income tax (50% of above) | | | 38 |
| Net operating savings after taxes | | | $162 |

* Note: This is a general guide or format for the typical tax computation—however, since each investment decision is an individual situation, the tax computation can and should reflect the particular case under consideration.

## A Theory of Depreciation Consistent with Decision-Making

*(Cont. from page 371)*

not distorted by changes in net cash proceeds when those changes were part of the original investment decision. To fully appreciate the advantages of the procedure described (which we shall call the "rate-of-return method of depreciation"), one should look at the results of using the straight-line method or any of the decreasing charge procedures, and compare them to the above results.

### CONCLUDING REMARKS

The assumption that depreciation cannot be computed or defined is not warranted. The problems of depreciation accounting are complex and this paper has not attempted to answer all the difficulties. For example, the assumption was made that the life of the investment was a function of time not activity, also the investment was a revenue-producing investment, and finally the proceeds of the specific investment being depreciated could be computed. Obviously there are limitations to the procedure outlined here. The limitations require explanations and special methods of depreciation, but this is not to say that a reasonable timetable for depreciation charges cannot be computed.

The question of depreciation procedures for purposes of computing income taxes has not been covered by this paper; we are dealing here with a theoretical treatment of depreciation for purposes of measuring income and computing return on investment. In making tax regulations there are other considerations, for example, the effect of the law on investment decisions, equity considerations, and the ease of verifying the correctness of the computations.

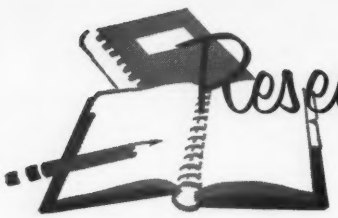
*If the rate-of-return method of depreciation is not advocated for use in computing depreciation for tax purposes, where can it be used?*

*Or is it just a theoretical model of no practical application?*

The concepts suggested in this paper could be very useful in appraising the results of operations, especially in a corporation which is divisionized. The distortion in the return on investment computation introduced by the straight-line method of depreciation is well known, but it is frequently ignored, or bypassed by using gross investment. Wherever performance is being measured and long-lived depreciable assets are being used, the rate-of-return method of depreciation accounting has application.

Another important application is in reappraisal of capital budgeting decisions. Capital budgeting decisions made using the rate-of-return or the present-value methods could be effectively appraised by comparing the actual cash proceeds to the predicted cash proceeds. However, this ignores the probability that management will appraise the results of the capital budgeting process using the income statement, accompanied by return on investment computations. It has already been shown how the method of depreciation accounting can distort both of these measures. The answer for complete appraisal of the effectiveness of the capital budgeting process lies in the use of rate-of-return method of depreciation accounting. This procedure alone takes into explicit consideration all the reasons why the investment was made in the first place.

The illustration which was used in this paper assumed that the actual cash proceeds equaled the predicted cash proceeds. This equality was chosen in order to illustrate the working of the procedure. The equality is not essential to the depreciation procedure. However, if the actual cash proceeds differ from the predicted proceeds, actual operating income will differ from the predicted income. This difference should be analyzed in detail and completely explained. This analysis will serve two functions. It will tend to improve the information prepared for the capital budgeting decision since it is known that the decisions will be reappraised throughout the life of the investment. Secondly, it will tend to help control costs since the two prime measures of performance (income and return on investment) will be made more meaningful.




### Business Cycle Analysis

A two-year research project to analyze business cycles is being undertaken by the National Bureau of Economic Research, with a grant from the National Science Foundation and the assistance of IBM. An IBM 704 will be used to make intensive analyses in economic areas that previously could not be satisfactorily studied because of the large computational costs involved.

### R&D Costs

Expenditures for research development in the United States climbed by $3.6 billion to a total of $9 billion between 1953 and 1956, according to the National Industrial Conference Board. Research and development by private industry accounted for $6.5 billion but almost one half of this cost was financed by the Federal Government. The remaining $2.5 billion was spent for research and development performed by the Government, and educational and nonprofit institutions.

### This Electronic World

The Navy's electronic supply office is using a UNIVAC to issue daily reports on the availability of 180,000 electronic items. Manual and semiautomatic data-processing methods made such inventory reporting possible only on a three-month basis.

•

Republic Steel Corporation is now using a $1 million electronic order processing system. A nation-wide network of teletypewriters linking the company's eight basic steel plants, key fabricating plants, and district sales offices to the general offices in Cleveland are used in the new system. The teletype machines are provided with special keyboards to allow duplication of the mill order forms, shipping schedules, shipping notices, control records and invoices. With these machines, operated by electronically punched tape, a mill order form complete in every detail can reach a mill the same day it is received at a district sales office. In the past, as much as a week was required between receipt of an order and scheduling at the mill.

•

Data produced by digital computers can be converted automatically into graphs, curves and mechanical drawings through a Dataplotter which is available through the Service Bureau Corporation, a subsidiary of IBM. The Dataplotter was manufactured by Electronic Associates, Long Branch, N. J.

### Salesmen's Earnings

Salesmen in many American manufacturing companies are now earning about 4.2% more than they did last year, according to a survey of 32,000 sales personnel completed by the AMA. During the past year, the average earnings of consumer goods salesmen increased 6.9% while industrial products salesmen increased their take-home pay only 3.2%.

More than 75% of the firms surveyed

## FOUNDATION RESEARCH REPORTS

1. BUSINESS ELECTRONICS REFERENCE GUIDE. Volume 4. (Released on July 10)

reports operating characteristics; arithmetic, input, output facilities and speeds; physical characteristics and availability of 38 electronic digital computer systems currently available for business applications of which 30 are American, seven English and one Japanese.

contains reports on 74 commercial electronic digital computer centers of which 29 are in eastern United States; 12 in midwestern/central United States; 17 in western and southwestern United States; five each in Canada and England; two in Germany; and one each in Belgium, France, Sweden, and Venezuela.

describes peripheral equipment and normal-run operations performed on the following computers by 388 users: ALWAC III; BENDIX G15-A; BIZMAC; BRITISH TABULATING MACHINE COMPANY 1201; BURROUGHS E-101; DATATRON 205; ELECOM 100; IBM RAMAC 305; IBM 650, 702, 704, 705; LEO I and II; MODAC 404 and 414; NATIONAL-ELLIOTT 405; POWERS-SAMAS P.C.C.; UNIVAC 60, 120, File Computer, and I.

Other major classes of data contained in this 604-page book are Electronic Computer Installations and Applications; Courses-Training Programs; Conferences-Seminars; Visual Presentations; Periodicals; Pamphlets, Proceedings, Reports; Books; Topical Index to Published Material; and Subscription-Updating Services.

2. BUSINESS BUDGETING. (Scheduled for distribution early in August)

is based on data developed by "depth-type" personal interviews in 35 companies and completed mail questionnaires returned by 389 companies. Among items covered in this comprehensive report are various facets of short-range profit planning or budgeting practices. For example:

383 companies establish short-range profit objectives for a period of one year or less.

334 companies reported on the actual length of time of their short-range profit budget period. Of these, 88 per cent use one-year profit plans; 8 per cent use a six-month span; and 4 per cent plan profit on a three-month basis.

303 companies supplied the following information on the use of formal written or informal profit objectives:

FORM OF PROFIT OBJECTIVE

| | *Combined* | *Company Size* | | |
|---|---|---|---|---|
| | | *Small* | *Medium* | *Large* |
| Total Replies | 303 | 92 | 114 | 97 |
| | *Per Cent* | | | |
| Formal Written | 91 | 89 | 92 | 93 |
| Informal | 9 | 11 | 8 | 7 |
| | 100 | 100 | 100 | 100 |

pay their salesmen bonuses and/or commissions and these incentive payments range from less than 10% to 100% of total compensation; 90% of the companies surveyed have retirement plans for their salesmen; and nearly all of them provide life insurance, hospitalization, and surgical benefits.

### Business Failures

Although business failures currently are climbing to new post-war peaks, the failure rise has slackened significantly, according to a study by Dun & Bradstreet. The increase amounted to 8% in 1957 as compared to 16% between 1955 and 1956 while in the first three months of 1958 it amounted to 10%. Related to the growing business population, the casualty rate remains considerably less severe than in 1939 as the failure rate for 1957 was 52 concerns for every 10,000 compared with 70 for every 10,000 in 1939.

Dollar liabilities involved in 1957's failures surged to $615 million, another new peak. Businesses over 10 years old continue to claim a growing proportion of total failures as they accounted for 19% of the total in 1957 compared with 9% in 1947; failures among enterprises in their first five years of operation are still large, and 60% of the 1957 casualties fell in this group.

### The Cost of Government

The salary of one average federal nonmilitary employe requires the income taxes collected from 19 average American workers, according to the Tax Foundation. The 2.3 million civilian workers in the Federal Government have been paid $11 billion a year and in addition 5.7 million employes of state and local governments receive about $19 billion. The active military payroll is $10 billion, bringing a total salary cost for government to $40 billion, excluding retirement pay.

### Increased Machine Accounting Printing

A unit, known as WROC 452, developed by Management Assistance, Inc., New York, has been produced to increase the co-selector, pilot selector and digit selector capacity of the IBM 407 printing tabulator. The unit, according to the manufacturer, gives additional selector capacity in order to utilize more fully the 407 in machine accounting applications.

### Corporate Working Capital

Net working capital of U.S. corporations continued to increase in the first quarter of 1958, according to the SEC. Working capital rose by $1.3 billion from the end of 1957 to $114.8 billion at the close of the first year: year-earlier total was $111 billion. The increase reflected a drop of $8.5 billion in current liabilities which more than offset a $7.1 billion decline in assets.

### Prize Sales Freed from Federal Excise Tax

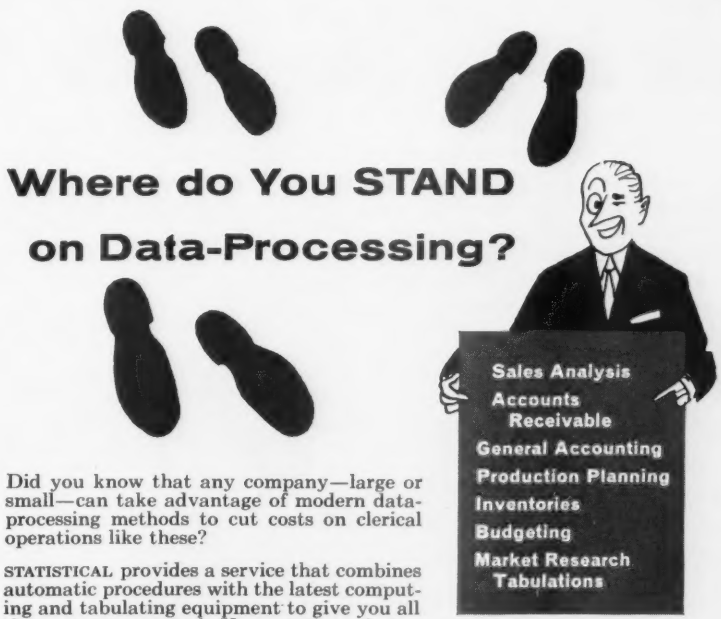
Sales of novelties, premiums, etc., of certain organizations for use as prizes and awards are no longer subject to the federal retailers excise tax where such sales are clearly made at "wholesale," according to an IRS announcement that it will recognize two federal court decisions holding that such sales are not "retail sales." In the court cases, the taxpayers (wholesalers) won relief from paying the retailers excise tax on sales of numerous kinds of merchandise and premium goods.

### Deferred Compensation Ruling

In a case where the Champion Spark Plug Company voted to pay some $34,000 in 60 semimonthly installments to an employe's widow as a substitute for life insurance, the Tax Court held that the total amount could be deducted by the company as an ordinary business expense when authorized rather than in smaller amounts as paid, the usual interpretation of the law on questions of deferred compensation. The employe had been engaged in extensive foreign travel for his firm and, the company said, had not been able to take out life insurance.

### Annual Reports

An increasing number of colleges throughout the United States are using annual reports of leading industrial corporations as textbooks and for required reading, according to *Financial World*.

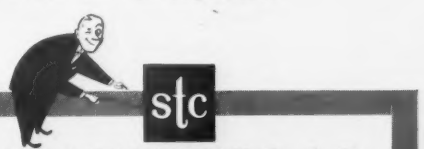




Did you know that any company—large or small—can take advantage of modern data-processing methods to cut costs on clerical operations like these?

STATISTICAL provides a service that combines automatic procedures with the latest computing and tabulating equipment to give you all the reports you need. You get them faster, more accurately and at lower cost—without investing in additional manpower and equipment.

If you have a tabulating department, STATISTICAL can help you cut costs in handling your overloads, retrenchments, conversions and special assignments.

***Just phone or write our nearest office.***



stc

**STATISTICAL TABULATING CORPORATION**

Established 1933 · Michael R. Notaro, President

TABULATING · CALCULATING · TYPING
TEMPORARY OFFICE PERSONNEL

**STATISTICAL** facilities now include the IBM 650 electronic computer which opens new avenues of cost control to management.

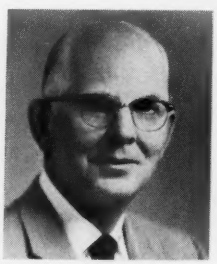
CHICAGO, *53 W. Jackson, HArrison 7-4500* · NEW YORK, *80 Broad St., WHitehall 3-8383*
ST. LOUIS, *411 N. Tenth St., MAin 1-7777* · NEWARK, *National Newark Bldg., MArket 3-7636*
CLEVELAND, *1375 Euclid Ave., SUperior 1-8101* · LOS ANGELES, *541 S. Spring St., MAdison 8-8201*
KANSAS CITY, *20 W. 9th St., GRand 1-3622*

# Personal Notes

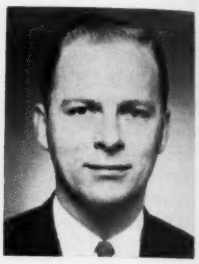
MR. DIDRIKSEN

MR. DOLAN

MR. WILES



MR. PYLES



MR. HANSON

## TOP MEN . . .

The announcement of the election of **J. William Didriksen** as president of Ekco-Alcoa Containers, Inc., Wheeling, Ill., was recently made by its joint owners, Ekco Products Company and Aluminum Company of America. Mr. Didriksen has previously been treasurer and comptroller of Ekco Products Company, Chicago, Ill. . . . **Henry P. Dolan** is now president of McLean Development Laboratories, Inc., Copiague, N. Y. Mr. Dolan served as president of the Long Island Control of Controllers Institute, 1956-1957.

## NEW CONNECTIONS . . .

**John C. Anderson** recently became controller of Vickers Petroleum Co. Inc., Wichita, Kansas. . . . **Collis W. DeHaven** was recently appointed comptroller of the Montgomery County Sanitary Department, Dayton, Ohio. Mr. DeHaven is the incoming president of the Dayton Control of Controllers Institute for the year 1958-59. . . . **George J. Finzel** is now treasurer of Unistrut Corporation, Wayne, Mich.

Hughes Aircraft Company, Culver City, Calif., recently announced the appointment of **Murray S. Gelber** as treasurer and director of finance. Mr. Gelber has been active in the affairs of Controllers Institute having been president of the Los Angeles Control and then serving as first president of the Arizona Control. He was also a national director of the Institute from 1954-57. . . . **Luis C. Roever** is assistant treasurer of Supreme Markets, Inc., Dorchester, Mass. . . . **Eugene F. McManus** is affiliated with Spreckels Sugar Company, San Francisco, Calif., as director of Budgets and Systems. . . . **Robert C. Wiles** has assumed the responsibilities of assistant controller of American Oil Company, New York.

## PROMOTIONS . . .

Dover Corporation, Washington, D. C., recently announced the election of **Robert S. Bethe** as treasurer. . . . **Jay Levy** was made controller of Faberge Inc., Ridgefield, N. J. . . . **Earl A. Matheney** is now treasurer and controller of Jenkins Music Company, Kansas City, Mo. Mr. Matheney served as president of the Kansas City Control of Controllers Institute, 1955-56.

MR. GELBER

MR. MANIFOLD

MR. JOHNSON

The election of **O. L. Kay McKibben** as treasurer of West Penn Power Company, Greensburg, Pa., was recently announced. . . . General Petroleum Corporation, Los Angeles, Calif., has elected **Harold D. Osborn** treasurer and a director. . . . **Edward J. Dormer** was appointed secretary of the Keyes Co., Miami, Fla.

## ADDITIONAL DUTIES . . .

**Henry G. Manifold** is now treasurer and controller of Servomechanisms, Inc., Hawthorne, Calif. . . . Fairmont Aluminum Company, Fairmont, W. Va., has made **Harley T. Pyles** vice president and treasurer. . . . **Allen E. Reed** was named vice president-finance and treasurer of Raytheon Manufacturing Company, Waltham, Mass. . . . **Harold F. Sanders** has assumed the vice presidency and will continue as secretary of Middle South Utilities, Inc., New York.

## COMPANY CHANGES . . .

The appointment of **John A. Hanson, Jr.** as comptroller of the Barrett Division of Allied Chemical Corporation, New York, was recently announced. . . . **Burdette A. Johnson** has been elected treasurer of the New England Gas and Electric Association and its subsidiary companies, Cambridge, Mass. He is succeeded by **John MacLachlan** as comptroller. Mr. Johnson was president of the Boston Control, Controllers Institute, 1955-56, and is currently serving as a national director of the Institute.

## RETIREMENTS . . .

**William R. Little,** controller of the Evening Star Newspaper Company, Washington, D. C., has retired after 37 years of service; he will be succeeded by **Edward H. Fawsett.** . . . Announcement was recently made of the retirement of **William L. Nason** as secretary and treasurer of G. Krueger Brewing Co., Newark, N. J. after 25 years of service with the company.

## HONORS TO . . .

**Harold E. Rowles,** treasurer, Stecher-Traung Lithograph Corp., Rochester, N. Y., who was elected a vice president of the National Association of Accountants. Mr. Rowles served as president of the

Rochester Control, Controllers Institute, 1954-55. . . . **Cecil D. Marshall,** deputy comptroller, Brooklyn Army Terminal, who was awarded a Certificate of Official Commendation for Meritorious Civilian Service by the Chief of Transportation, Department of the Army, in recognition of his outstanding performance of duty.

SPEAKERS . . .

Three Canadian members of Controllers Institute, **George Moller,** treasurer, Robertson-Irwin Limited, Hamilton, Ont.; **K. M. Place,** assistant treasurer, DuPont Company of Canada Limited, Montreal, Que.; and **John M. Thompson,** vice president-finance, Howard Smith Paper Mills Limited, also Montreal, appeared as speakers at an orientation seminar on reporting financial data which was held by the American Management Association.

**I. Wayne Keller,** controller, Armstrong Cork Company, Lancaster, Pa., spoke at the commencement exercises of the Bentley School of Accounting and Finance, June 6. . . . Six Institute members played important roles at the 37th Cost and Management Conference of the Society of Industrial and Cost Accountants of Canada. The meeting was held June 25-27 in Toronto, Ont. Appearing as session chairmen, speakers, panel members, and discussion leaders were: **A. G. Howey,** vice president-finance, Atlas Steels Limited; **R. Burt Gookin,** comptroller, H. J. Heinz Company, Pittsburgh, Pa.; **George Plummer,** senior vice president, Dunlop (Canada) Limited, Toronto; **George Moller,** treasurer, Robertson-Irwin Limited, Hamilton, Ont.; **R. E. Oliver,** treasurer and controller, Donald Ropes & Wire Cloth Limited, Hamilton; and **J. H. Reid,** president, Standard Paving and Materials Limited, Toronto.

At the 38th Annual Convention of the Controllers' Congress, National Retail Merchants Association, held at the Hotel Muehlebach, Kansas City, Mo., May 25-29, the following speakers participated in part of the program: **Vincent T. Lorimer,** vice president and treasurer, Emery, Bird, Thayer Co., Kansas City, Mo., acted as moderator for a discussion on the subject of "Developing a Top-notch Employe Benefit Program—Economically"; the session on the subject, "A Comprehensive Look at the Handling of Mail Orders," was chairmanned by **William Hansen,** controller, Wieboldt Stores, Inc., Evanston, Ill.; **Harry W. Krotz, Jr.,** assistant treasurer, J. W. Robinson Co., Los Angeles, Calif., was one of the speakers on "Expense Savings Panorama"; the closing session of the convention was moderated by **Herbert G. Schachtschneider,** assistant secretary and controller, Ed Schuster & Co., Milwaukee, Wis., and **J. Hadley Evans,** manager, Control & Credit, Allied Stores Corp., New York, and **Mr. Krotz** were among the speakers at the final session.


# THE SEARCH FOR BRAINS IN 1962 will be easier if you do something about it NOW . . .

**Is your firm telling high school seniors and college students about the broad area of accounting careers today to insure having adequately trained accounting personnel tomorrow?**

**The National Committee on Education of Controllers Institute of America has prepared this three-color 16-page booklet to help you inform today's students of the many career opportunities that stem from academic training in accounting.**

**The result of two years' work and constant consultation with leading educators, this booklet answers the questions most often asked by students who are undecided upon a career. The Committee has already sent sample copies to colleges, secondary schools and guidance counsellors throughout the country.**

YOU CAN PLACE YOUR OWN IMPRINT ON THE BOOKLET IF YOU WISH TO IDENTIFY YOUR COMPANY'S INTEREST IN YOUR COMMUNITY

*25¢ per copy*

**DESIGNED FOR DISTRIBUTION** by corporations to high school graduates and college undergraduates in their recruiting areas, this "career" booklet is aimed at attracting students to accounting and providing you with future accounting personnel.

*Place Your Order Now!*

Controllers Institute of America C8-58
Two Park Avenue, New York 16, N. Y.

Send me ..... copies of "Moving Up in Business—A Look at Managerial Accounting" at 25¢ per copy postpaid (Check enclosed ) (Bill me later )

NAME ..... TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

# Two More States Adopt Pay-As-You-Go for Corporate Income Taxes

TWO MORE STATES are requiring prepayment of their income taxes by corporations, notes Commerce Clearing House. Recently enacted laws in Delaware and Colorado require substantial advance payments to be made on the basis of tentative returns filed during the taxable year. Pennsylvania has required such estimated returns and advance payments since 1953.

Three other states offer corporations the option of filing tentative returns and making prepayments during the current taxable year, according to the CCH report. These states and the year in which their respective laws were effective are: Oklahoma, 1947; Kansas, 1951; and Georgia, 1956.

These laws follow in principle the federal pay-as-you-go plan for corporations with estimated tax liabilities in excess of $100,000. Under the federal system, a calendar year corporate taxpayer must file an estimate of its federal income tax liability on or before September 15 of the taxable year, and make a part payment, due in equal amounts, on September 15 and December 15.

Starting in 1955, this part payment was 10 per cent. Increasing 10 per cent each year, it now stands at 40 per cent for 1958 income, with a maximum of 50 per cent next year. The final settlement, made when the corporate income tax return is filed on March 15 of the year following, may be divided into two equal payments, due March 15 and June 15.

The new Delaware corporation income tax law, enacted in 1957, provides for the filing of tentative returns on April 1, 1958 covering estimated net income of calendar year business operations within the state during 1958. A payment of 50 per cent of the estimated tax liability must accompany the tentative return.

Under the new Delaware law, the final tax return for the year must be filed on April 1, 1959 by calendar year corporations. The balance of the tax is due on the filing date. This law does not apply to corporations which maintain statutory offices in Delaware but do no business in the state, according to the CCH report.

Colorado, under its recent action, will require declarations of estimated tax by corporations which anticipate 1959 tax liability in excess of $1000. An estimated return will be due April 15, 1959 and payments are to be made quarterly during the year.

Among the 33 states which impose income taxes on corporations, 12 require full payment of the tax at the time the final tax return is filed. Two other states bill corporations for payment following the filing of the return. The remaining 19 states accept part payment from corporations on the due date of the tax return, extending the balance over various periods ranging from one to nine months.

Individuals also are required to make payments of estimated taxes in some states, the CCH report says. Of the 32 states which impose personal income taxes, 11 require tax withholding from employes similar to the method used under the federal income tax system.

Six of the latter group of states demand that all who receive income NOT subject to tax withholding must file declarations of estimated taxes during the taxable year and accompany them with tax payments. These states are: Alabama, Colorado, Kentucky, Maryland, Montana and Vermont.

Georgia, which does not require withholding, gives individuals the option of filing estimated tax returns and making payments during the last quarter of the taxable year. Kansas and Oklahoma also allow the filing of tentative returns during the taxable year, according to the CCH report.


seven special services

write for this handbook-in-a-capsule

ASSOCIATED TABULATING CONSULTANTS
2629 North Charles Street
Baltimore 18, Maryland



FACTUAL APPRAISALS

for every valuation need

- Insurance — coverage and proof of loss
- Property, cost and general accounting
- Corporation finance
- Legal requirements
- Purchase or sale
- Reorganization, merger or consolidation

THE LLOYD-THOMAS CO.
*Recognized Appraisal Authorities*
4411 Ravenswood Ave., Chicago 40, Ill.
Offices — Coast to Coast
*First for Factual Appraisals Since 1910*


## Clerical Arithmetic Errors High in Opinion Research's Exam

Approximately one out of five bank clerks is unable to add a simple column of two-digit figures, according to a nationwide survey made by Opinion Research for the National Cash Register Company. More than 500 clerical workers employed by 21 different business organizations—including five banks—took part in the exam.

Previous tests indicated that the arithmetic ability of these employes was average for clerical workers throughout the nation, the report said. The survey showed that a college education has very little effect on a bank clerk's arithmetic ability and that women—normally thought to have "no head" for figures—did just as well as men on the test. Clerks over 40 were slightly more accurate than those in a younger age group.

The problem that was failed by one out of five involved adding a column of seven two-digit figures. Even when the bank clerks were allowed to check their figures, an average of 10 per cent still came up with the wrong answer. The purpose of the test was to determine both the written and mental arithmetic abilities of clerical personnel.

The survey itself did not explain why so many people failed simple addition problems, but Dilman Smith, director of Opinion Research, offered this comment: "With the increased use of business machines in banks, it isn't necessary for a clerk to be a walking adding machine any more."

In one part of the exam, when the clerical employes were asked to add 29 plus 37 in their heads, approximately one out of 10 came up with a different total. A bank clerk who checks his answer to a problem has a better chance of coming up with the right answer, but the average employe is still far from a mathematical genius even when he is given all the time he wants to check his total.

In one part of the exam, the clerks were asked to add a column of 15 low numbers such as 22, 16 and 43. Although they had an opportunity to re-check their answers, one out of three flunked the test.

The clerical employes also were tested for their ability to make change. "A customer makes a purchase of $3.39 and hands you a five-dollar bill," the clerks were told. "How much change should you give her?" More than 15 per cent of the employes gave the wrong answer.

# Union Dues Analyzed

INCOME from dues among labor unions with headquarters in the United States amounts to an estimated $620 million a year, according to the National Industrial Conference Board's second survey of union revenue and membership. The 1957 figure is approximately $162 million higher than the annual dues rate of 1955, when the Conference Board's first study on union dues revenue was made. Of the 191 unions surveyed this year, 45 have indicated to the Conference Board that they have raised their dues since 1955. The NICB also finds that national and international unions, which gain their revenue by per-capita taxes on members in their local unions, have had a $25 million boost in their income during the two-year period.

The declared membership of the 191 unions surveyed this year totals approximately 18,350,000. Of this total, approximately 17 million members are claimed by unions that were affiliated with the AFL-CIO prior to its December 1957 convention, and approximately 1.3 million members are claimed by independent unions. The 1957 total membership compares with a declared membership of approximately 17.5 million for substantially the same unions covered in the study made in 1955, before the AFL-CIO merger.

Of the 18.4 million members listed, approximately 17.4 million are in the United States, constituting about 98 per cent of the country's total national and international union membership. Close to one million members of unions with headquarters in the United States are in Canada, where they comprise about 75 per cent of that country's total union membership.

The estimated $620-million-a-year union revenue may be a minimal figure, the Conference Board notes. No exact answer can be given to how much dues money unions collect from their members because the constitutions of many international unions allow the locals considerable latitude in determining their dues rates. About the only unions that do have exact figures are those in which the international collects the dues and then refunds the local unions' share. The United Mine Workers and the United Steelworkers are examples of such unions.

In spite of this limitation, the Conference Board was able to secure an estimate of union revenue by a careful analysis of available dues rates and membership figures provided by many of the unions.

Two of the principal reasons found by the Conference Board for the increase in union revenues from an estimated $458 million in 1955 to the estimated annual rate of $620 million for 1957 are:

- Declared membership for the 191 unions surveyed has increased by nearly one million.
- Almost 25 per cent of the 191 unions surveyed have raised their dues.

Dues increases have occurred frequently in the past two years, according to the NICB study. The smallest amount was a 25-cent monthly increase in the United Mine Workers, bringing monthly dues to $4.25. The largest over-all increase was the AFL-CIO Marine Engineers Beneficial Association's $5.00-a-month increase in the minimum rate, bringing dues to $10.00 a month. The AFL-CIO Air Line Pilots Association increased its top dues rate from $25 to $31.25 a month. However, this new rate only applies to pilots earning over $19,000 a year. In addition, not all of this $6.25 a month increase can be considered as a dues increase as this union usually makes dues rebates at the end of the year.

Sixty-seven unions, or slightly more than one third of the survey cooperators, have increased the amounts of their per-capita tax on member locals during the past two years. The great majority of these per-capita tax increases fell in the five cents to 25 cents a month range.

It is clear that local unions retain the major share of the dues collected, according to the NICB. Locals collect approximately $620 million in dues a year and per-capita tax provisions earmark about $254 million of this for the international unions.

Forty-nine of the reporting unions say they have gained 2,000 or more members during the past two years, for a total increase of close to a million members, according to the NICB. The AFL-CIO Machinists with 98,206 additional members had one of the largest increases. However, a considerable portion of this increase reflects the Machinist union's absorption of United Electrical Worker (UE) districts and locals in several states.

Eighteen unions had membership losses of 2,000 or more, totaling 250,832 members. These losses were particularly heavy among some of the railroad unions, due largely to recent decreases in the labor force within the industry. In the textile field, the Textile Workers (formerly CIO) showed a 76,970 loss and the Hosiery Workers a 10,000 loss in members. To a large extent these figures reflect the shift of the textile industry to the south.


**ACCOUNTANTS**

Do not apply for a new position, promotion or examination until we have rated you with our ACCOUNTANTS ABILITY TEST. No computations or words to write. A refresher course in itself.

**Price $2.00**

**ACCOUNTING SERVICE COMPANY**
**Dept. 308, G.P.O. Box 664, New York 1, N. Y.**


## ADVERTISING INDEX


Accounting Service Company ..... 399

American Appraisal Company, The ..... 389

Associated Tabulating Consultants ..... 398

Bell & Howell Phillipsburg Co. ..... 353

Burroughs Corporation ..... 358

Chase Manhattan Bank, The ..... 351

Controller, The ..... 389

Controllers Institute ..... 383, 397

Controllership Foundation, Inc. 381, 384, 385, 390

First National City Bank of New York, The Inside Back Cover

Ford, Bacon & Davis ..... 352

Friden, Inc. ..... 363

Walter D. Fuller Company ..... 384

Haloid Xerox Inc. ..... 355

International Accountants Society, Inc. .... 349

International Business Machines Corp. 366-67, 386-87

Lloyd-Thomas Co., The ..... 398

Marchant Calculators, Inc. ..... 356

McCormick & Co. ..... 389

National Cash Register Co., The .... Back Cover

Pandick Press, Inc. ..... 379

Record Controls, Inc. ..... 384

Recording & Statistical Corporation ..... 391

Ronald Press Company, The ..... 378

Royal McBee Corporation ..... 374-75

Standard Appraisal Co. ..... 390

Statistical Tabulating Corp. ..... 395

Traveletter Corporation ..... Inside Front Cover

## ★ OPPORTUNITIES ★

**EMPLOYMENT • SERVICES • MISCELLANEOUS**

RATES: *$5.00 per inch or fraction thereof each insertion. 50¢ each additional line. Payable in advance. Allow approximately 40 words to the 1 column-wide inch including 2 words for box number. Closing date 10th of preceding month.*

Address box number replies to
THE CONTROLLER
Two Park Avenue, New York 16, N. Y.
Replies will be forwarded.

### HELP WANTED

**ASSOCIATION CONTROLLER**

To bring sound financial and accounting procedures and control to medium-sized national association headquartered in Washington, D. C. Must be a solid professional with ability to guide people and keep organization economically sound. Compensation, low five figure range. Box 2335.

### SITUATIONS WANTED

**ASSISTANT TREASURER**
**and/or**
**INSURANCE MANAGER**

*Are you a treasurer or controller who is so burdened down with details that you cannot devote adequate time to your administrative duties?* My 22 years of experience with three manufacturing companies as assistant controller, insurance manager, director of accounting, office and credit manager have given me the varied background and training required to be a valuable staff assistant in your organization. Age 46. Married, two children. Most willing to relocate. Box 2336.

**CONTROLLER-TREASURER**

Substantial multicorporate, multiplant experience including management controls, budgets, costs, IBM systems installation, and taxes. Present company profitably sold. Prefer eastern location. CPA, B.S. degrees. Box 2337.

**AMERICAN CPA**

with extensive European experience desires return Europe, Mideast or South Africa. Fine record as treasurer, controller, financial advisor, auditor. Equally conversant American and European management procedures and accounting systems, costs, budgets and local customs. Bilingual French, elementary Italian, Spanish. Age 39, married. Box 2338.

**CONTROLLER-TREASURER**

Financial and accounting executive with broad administrative experience seeks opportunity with firm of potential growth. Familiar with capital financial planning, IBM accounting, cost accounting, general accounting, budget preparation and clerical cost-cutting techniques. Will relocate. Box 2340.

### MISCELLANEOUS

**WANTED—CONTROLLER MAGAZINES**

We're sold out again on these issues needed to complete "back-copy subscriptions" or to fill "single copy" requests: April and May 1958. If you have extra copies or have read your copies and will part with them, send to the Circulation Manager, The Controller, Two Park Avenue, New York 16, N. Y.

NOTE: THE CONTROLLER *reserves the right to accept, reject or censor classified copy and takes no responsibility for the people contacted through this column nor does it guarantee any item bought or sold.*

# Capital Investment Per Production Worker Rises

AVERAGE CAPITAL INVESTMENT per production worker rose to an estimated $16,000 by mid-1957, the National Industrial Conference Board reported. The half-year figure, converted to an annual basis, amounts to a $1,200 increase over the $15,400 capital investment per production worker in 1956 and becomes the third highest increase since the Conference Board began computing this current series in 1939. The gain appears to be the result of a moderate rise (7 per cent) in investment and a decline of nearly 2 per cent in the number of production workers.

The estimated gains of $1,800 between 1955 and 1956 and nearly $1,500 between 1953 and 1954 are the highest jumps on record, the NICB reports. However, marked differences are apparent in the factors which caused the hikes. The increase between 1955 and 1956 resulted from an estimated 14 per cent boost in investment, offset slightly by a 1 per cent gain in the number of production workers. By contrast, the 1953-54 increment resulted mainly from a sharp drop (9 per cent) in the working force, aided by a small increase (2 per cent) in total investment.

A breakdown of the investment per production worker by industry, based on Internal Revenue statistics, is available through 1954. It shows the petroleum, tobacco and chemical industries on top of the list, with the apparel, leather, lumber, and furniture and fixtures industries far below the all-industry average.

Total capital investment rose to $167.7 billion in 1954, a gain of slightly more than $4 billion above the previous year's total. This represented the smallest yearly increment since 1949.

The petroleum industry accounted for better than four-fifths of the 1954 gain. Moderate gains were recorded in the chemical, paper, and food industries, while metal products and processing industries and the miscellaneous manufacturing category experienced declines in the total volume of investment.

Despite the relatively small rise in total capital invested in 1954, the sharp decline in the number of production workers in nearly all industries resulted in an increase in per worker capital investment between 1953 and 1954 for 20 of the 21 industries included in the Conference Board's series. Only the "other manufacturing" category suffered a mild decrease.

The largest percentage gain noted was in the motor vehicle group, which jumped 22 per cent after experiencing a sharp drop between 1952 and 1953. Three industries—furniture and fixtures, petroleum, and fabricated metal products—advanced more than 15 per cent, and seven other groups added betwen 10 and 15 per cent to their capital invested per production worker.

Since 1948, only five industries have had a continuous rise in per worker capital investment—tobacco; printing and publishing; petroleum; stone, clay and glass; and nonelectrical machinery. All other groups declined at least once during the six-year period, most of the decreases occurring in 1953.

The largest gains made during this time span were recorded in motor vehicles, instruments, and primary metals, all three increasing slightly over 70 per cent.


# Vice President *of Finance*

**$45,000**

This opportunity will attract an executive qualified to be the chief financial officer of a prominent multiplant manufacturer in the metal products field. Our sales exceed $50,000,000 annually. We have an excellent financial position, profitable operations and a record of sound management. Our continued growth is assured.

This executive will report to the President, will be a member of the top management policy-making body and he will have full responsibility for all phases of finance and accounting.

We are seeking a man with sufficient experience to demonstrate his ability to carry out successfully these responsibilities. A knowledge of finance company operations would be helpful but is not required.

Your reply may be brief and it should include personal background, present connection and an outline of your experience. It will be treated in strict confidence.

***Box D 2339 The Controller*** ***2 Park Ave., New York 16, N. Y.***